

**BETWEEN- AND WITHIN-CHILD ASSOCIATIONS OF FRIENDSHIP  
QUALITY AND SOCIAL FUNCTIONING AND ACADEMIC ACHIEVEMENT  
THROUGHOUT MIDDLE CHILDHOOD**

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Laura Scharphorn, PhD

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During middle childhood, children begin to spend less time at home and more time with friends. Past work on friendships has suggested that friendship quality is positively associated with social and academic functioning. However, this work has focused on adolescents and has been limited by using short-term research designs and between-child comparisons, restricting the scope of investigation to friendships occurring at school, and examining friendships in isolation from children's relationships with their mother and teachers. Since friendships offer a potential point of leverage in supporting children's academic and social functioning, understanding them in middle childhood, when friendships become developmentally-salient in children's lives, is needed.

The present study is a multi-method, ecologically-grounded investigation of the associations between friendship quality and children's social functioning and academic achievement throughout middle childhood. This study used data from the NICHD Study of Early Child Care and Youth Development (SECCYD) to conduct between- and within-child analyses across third through sixth grades to examine these research aims: (1) investigate whether friendship quality is associated with children's social and academic functioning; (2) examine the

independent contribution of friendship quality to children's positive functioning over and above mother and teacher relationship quality; (3) examine whether friendship quality magnifies high-quality mother or teacher relationships to promote greater functioning; (4) investigate whether the importance of friendship quality for supporting social and academic functioning increases as children progress toward adolescence; (5) study whether classroom-based friendships are associated with more positive functioning than friendships that are not classroom- or school-based; and (6) investigate whether friendship quality is particularly important in aiding positive development for children with lower engagement. Results indicated that children with higher levels of friendship quality displayed lower levels of internalizing problems, and that children who grew in friendship quality also increased in reading and math grades and social skills across middle childhood. Results also indicated that friendships uniquely contribute to children's positive functioning and generally remain unmitigated by age, proximity in school, and levels of engagement. Promoting friendship quality seems to be a promising avenue by which to support children's social and academic functioning during middle childhood.

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## **1.0 INTRODUCTION**

Middle childhood has garnered recent attention as a developmental period that serves as a catalyst for development in adolescence and adulthood (Biehl, Park, Brindis, Pantell, & Irwin, 2002; Campbell, 2011; Magnuson, Duncan, and Kalil, 2006). Middle childhood (ages 6- to 12-years old) is characterized by increased cognitive and social capacities without the social and pubertal pressures of adolescence, and some researchers have suggested that this period may be an opportunity to maximize children's potential for positive development (Huston & Ripke, 2006). Relationships with friends during middle childhood appear to be an important avenue for promoting long-term development and well-being. Studies have suggested that children who experience positive relationships with their age-mates during their elementary years have better achievement and engagement in school in adolescence (Wadsworth, Corley, Plomin, Hewitt, & DeFries, 2006), and more success in work and romantic relationships in adulthood (Collins & van Dulmen, 2006; Pettit et al. 2006). Friendships are a normative experience for children during middle childhood (Bagwell & Schmidt, 2011a), and we may be able to capitalize on these relationships to promote positive developmental trajectories into adolescence and beyond. Friendships during middle childhood thus deserve more investigation to distinguish associations between friendship quality and positive functioning.

Relationships are integral to development and well-being (Baumeister & Leary, 1995). Children's first relationships are generally with their mothers and expand to other family members and caregivers as they grow. As children progress to middle childhood, their relational needs extend to their age-mates. Children spend more than 30% of their social interactions with their age-mates during middle childhood, as they become increasingly involved in school, sports, and extracurricular programs (Eccles, 1999; Rubin, Bukowski, & Parker, 2006). Friendships thus become a developmentally-salient context for children during middle childhood. Past research suggests that the quality of these friendships is associated with children's positive social and academic functioning (Berndt, Hawkins, & Jiao, 1999; Berndt & Keefe, 1995; Waldrup, Malcolm, & Jensen-Campbell, 2008). Friendships provide children with emotional and instrumental support that aids their positive social behavior and academic achievement (Parker & Asher, 1993). Specifically, high quality friendships offer children emotional security to better modulate their behavior and emotions and provide help in school assignments and understanding new concepts and ideas (Parker & Asher, 1993). Thus, friendships appear to be a developmentally-relevant and supportive context for children's positive development during middle childhood. Research, however, has tended to focus on friendships during adolescence and further research is needed to understand associations between friendships and children's functioning when they are first established (Berndt, 2002; Hartup, 1999; Witkow & Fuligni, 2010).

Children's relationships with their parents and teachers contribute greatly to their development (NICHD ECCRN, 2003; Pianta & Stuhlman, 2004), and the independent contribution of friendship quality to children's social and academic functioning during middle childhood is not well understood. Thus, although friendships seem to contribute to children's

positive functioning, they may not uniquely contribute over and above the important relationships children have with their mother and teacher. Examining all of these relationships simultaneously is needed to disentangle the developmental significance of each of these relationships for children's positive development and provide an ecologically-based approach to investigating important proximal contexts to children's development (Bronfenbrenner, 1979). Also, friendship quality may enhance the magnitude of associations between high quality relationships with mothers and teachers and social and academic functioning. High quality friendships may intensify the benefits of high quality mother or teacher relationships to support even greater functioning than when children have only one high quality relationship.

Several questions also remain about the importance of friendship quality for children's development during middle childhood. First, does friendship quality become more important as children progress towards adolescence? The role of friendship quality in promoting growth in children's social and academic functioning across multiple grade levels remains unclear, and is a key question in understanding whether friendship quality is associated with children's development over time. In particular, more research is needed to understand whether friendship quality becomes more or less central for promoting children's functioning as they age to inform programming and interventions on the age groups for which friendship quality and positive functioning is most related. Second, does friendship quality benefit children's social and academic functioning only when children share a classroom with their close friend? It is unclear whether the associations between friendship quality and children's social and academic functioning are similar for children whose close friend is not present with them throughout the school day. Last, does a child characteristic, namely engagement, make friendship quality particularly important for positive development? Friendships promote children's engagement and

persistence in challenging tasks, and high quality friendships may be especially supportive for positive functioning for children with lower levels of engagement.

The goal of the present study was to provide an ecologically-based extension of past research on the associations between children's relationships and their social and academic development to include friendships throughout middle childhood. Specifically, this investigation explored (1) whether friendship quality is associated with children's growth in social and academic functioning across third through sixth grades, and (2) whether friendship quality uniquely contributes to children's functioning above relationships with mothers and teachers. To address remaining questions about friendship quality that may further inform our understanding of its role in children's social and academic development, several other issues relevant to friendships were also examined. This study investigated whether friendship quality might enhance high-quality mother and teacher relationships to support even greater social and academic functioning, studied whether the importance of friendship quality for supporting social and academic development increases as children progress toward adolescence, examined whether classroom-based friendships are more supportive of children's social and academic functioning than non-classroom-based friendships, and studied whether friendship quality may be particularly protective for children with lower levels of engagement.

## **1.1 A THEORETICAL FRAMEWORK FOR EXPLORING ASSOCIATIONS BETWEEN FRIENDSHIPS AND SOCIAL AND ACADEMIC FUNCTIONING**

Several theories help to explain the mechanisms by which friendship quality promotes social functioning and academic achievement, and the present study employs these theories as a framework: human needs for belonging and achievement (Maslow), developmental relationships (Sullivan), and attachment security (Ainsworth). Specifically, Abraham Maslow (1943) proposed a hierarchy of human needs, arguing that the fulfillment of basic needs takes precedence over the fulfillment of higher-order needs; in other words, once needs are met that allow humans to survive, they seek to meet other needs that allow them to thrive. Assuming that basic biological needs for food and safety are met, humans are motivated to meet their relational needs. Several developmental researchers have furthered Maslow's theory by reviewing empirical evidence that indicates that humans are motivated by their need to belong (Baumeister & Leary, 1995; Deci & Ryan, 2000). Once children's need for relationships is met, they may progress to higher levels of functioning, including achievement.

Furthering Maslow's theory, Sullivan (1953) posited that relational needs are met in a progression of important people in the child's life, first by parents in children's early years. Other early caregivers, such as teachers, meet children's expanding relational needs as they begin to spend time away from parents. As children enter middle childhood, they seek out relationships with same-age peers. This is the first time children experience horizontal relationships where each person has equal power (as opposed to vertical relationships shared with adults), and children develop self-esteem as they realize their worth in the context of the friendship (Sullivan, 1953). Friendships thus become a developmentally-salient context of

development in middle childhood. When children's developmental relational needs are met, they are able to focus on their next need: achievement through prosocial behavior and successful school performance. Maslow's theory has been bolstered by research suggesting that meeting students' need for belonging is associated with their greater engagement, motivation, and achievement, and fewer behavior problems (Goodenow, 1993; Goodenow & Grady, 1993; Osterman, 2000; Waters, Cross, & Runions, 2009). Thus, children who successfully meet their need for a supportive friendship may be better able to engage in positive social and achievement behaviors.

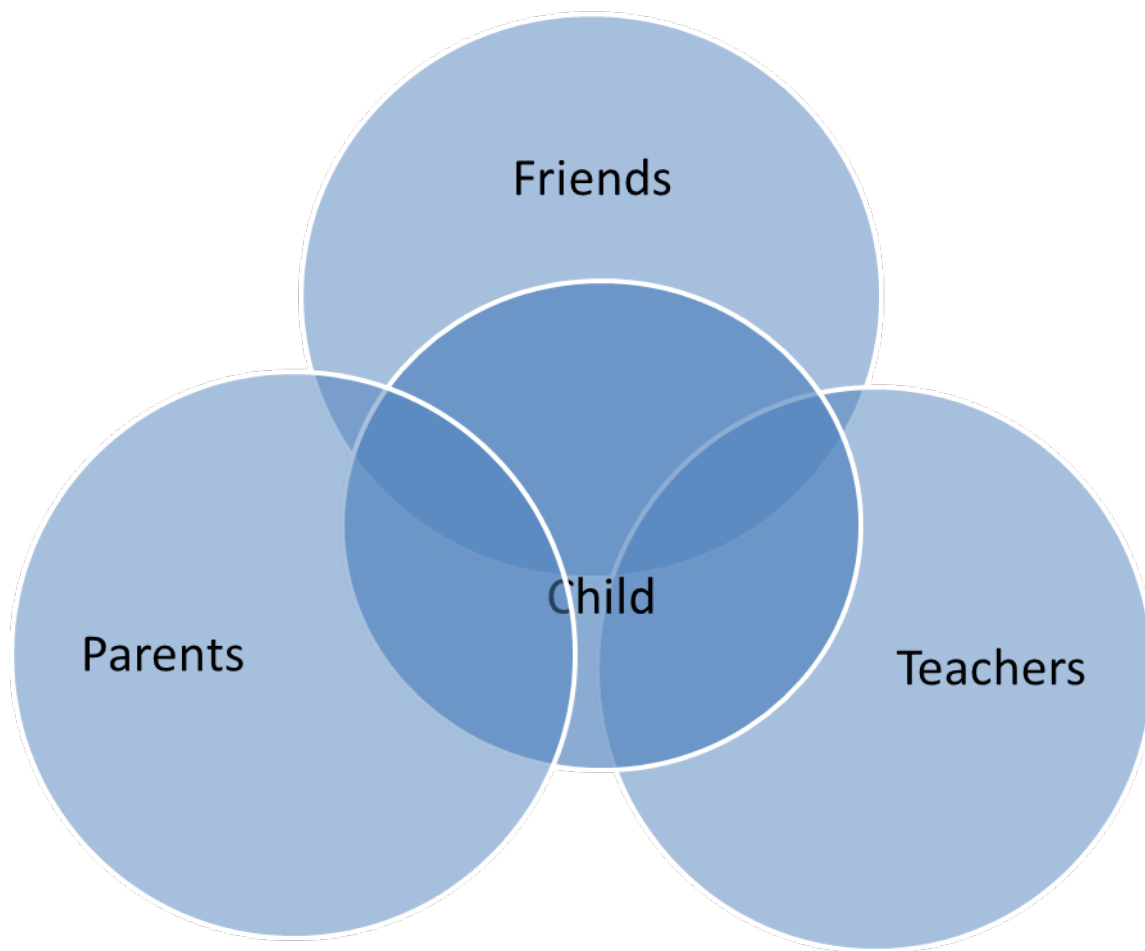
In addition to meeting children's developmental relational needs, friendships provide a secure base from which to explore surroundings (Ainsworth, 1989). Similar to the assurance a secure attachment with his or her mother provides a child in exploring his or her environment, a quality friendship encourages a child's more engaged and confident exploration of their expanding world. Friendships provide children with emotional security that promotes a wider range of expression of attitudes, behaviors, and emotions (Kobak, Rosenthal, & Serwik, 2005; Parker & Asher, 1993; Rubin, Bukowski, & Parker, 2006). In addition, secure attachments provide a sense of felt security for children that persists even when the object of attachment is not in close physical proximity (Bretherton, 1985). The feelings of reassurance that children derive from high quality friendships thus afford opportunities for them to further develop their social skills and success in the classroom. Additionally, a child's internal working model of earlier relationships affects his or her assumptions and expectations of subsequent relationships (Ainsworth, 1989). This suggests that developing positive friendships in middle childhood may lead to positive friendships in adolescence, a period of development when friendships may be particularly associated with children's behavior and achievement (Berndt, 2002; Buhrmester,



1998). Internal models of positive relationships may also imply that children who develop supportive mother and teacher relationships may be more likely to also develop supportive friendships. One positive relationship may condition another relationship so that the supportive effects of these relationships are compounded and produce greater levels of positive functioning for children (Crosnoe, 2004).

Research suggesting that friendships are associated with children's positive functioning aligns with a great deal of evidence that indicates that relationships are indispensable for children's development. Most of this research centers on the relationships parents have with their children (NICHD ECCRN, 2003; Sroufe, 2000; Waters & Cummings, 2000), and a growing literature on teacher-child relationships reveals the significance of teachers for children's positive development (Maldonado-Carreño & Votruba-Drzal, 2011; Pianta & Stuhlman, 2004). The importance of children's relationships with other components of their microsystem (i.e., people with whom they have contact every day; Bronfenbrenner, 1979), however, is less clear, even though research suggests that friendships may play a significant role in the lives of children. The importance of having at least one close friend in middle childhood and adolescence, for example, has been demonstrated in research showing that children without friends have more internalizing and externalizing problems, display less social competence, are lonelier, and are more often victimized by their peers (Boulton, Trueman, Chau, Whitehand, & Amatya, 1999; Brendgen, Vitaro, & Bukowski, 2000; Ladd & Troop-Gordon, 2003; Parker & Seal, 1996). Friendships thus appear to have an important and perhaps unique function in children's positive development. Past work, however, has tended to focus on mother-child and teacher-child relationship quality and friendship quality is a missing piece of the ecological puzzle in

understanding the effects of relationships on children's development (see Figure 1 for the conceptual model).



**Figure 1. Important Relationships for Children's Development**

## **1.2 THE IMPORTANCE OF FRIENDSHIPS FOR SOCIAL AND ACADEMIC FUNCTIONING**

Theory and empirical evidence suggest that developmental changes that occur in middle childhood make this period particularly important for the development of friendships. One of the first friendship researchers, Henry Stack Sullivan (1953), theorized that friendships become important for children around the age of eight years old. During this time, children's perspective-taking ability improves, and they are better able to understand the thoughts and feelings of others. This understanding builds intimacy, a hallmark of friendship, and children establish their first close friendships. These friendships in turn serve the developmental task of helping children create a sense of self-identity outside of their family (Sullivan, 1953). Changes in children's social structure during middle childhood also make this time significant for the formation of friendships. Children begin to spend more time outside the home and away from family and become more active participants in deciding where and with whom they spend their time (McHale, Dariotis, & Kauh, 2003). Children's need for relatedness grows during middle childhood, and they increasingly look to their age-mates for companionship and recreation (McHale, Dariotis, & Kauh, 2003; Roeser, Midgley, & Urdan, 1996). As these relationships develop, children experience acceptance and intimacy within friendships, which contributes to children's self-esteem and self-worth (Bagwell, Newcomb, & Bukowski, 1998; Sullivan, 1953). These positive feelings of self promote children's social and academic functioning (Wentzel, Barry, & Caldwell, 2004).

Further, as mentioned above, children's social and academic functioning is supported by the emotional security and instrumental support provided by friendships. Children develop

emotional security, expression of ideas, and concepts of sharing and intimacy within the safe confines of the friendship, and are then able to use these skills with others (Rubin, Fredstrom, & Bowker, 2008). Thus, as children learn skills that contribute to their friendship quality, such as cooperating, modulating emotions, asserting ideas, and regulating behavior, they are able to display these skills in other contexts as well. This development of social skills and emotional security within the friendship likely aids children's successful social functioning. The emotional security provided by a friendship also supports academic achievement. A child who feels cared for and supported by a friend may have self-confidence to ask questions in the classroom and engage and persist in challenging work, thereby promoting cognitive growth (Newcomb & Bagwell, 1995). Friendships also provide children with instrumental aid in academic tasks by being a sounding board for ideas, providing guidance in school assignments, and sharing books, puzzles, games, and activities that support achievement (Reid, Landesman, Treder, & Jaccard, 1989). Thus, friendships that provide help and support will likely foster children's academic achievement.

Research on the friendships of older children and adolescents has generally corroborated this evidence, indicating that higher quality friendships are associated with greater social and academic functioning. Research on children's friendships generally defines friendship quality as high levels of positive friendship features (i.e., companionship, intimacy, supportiveness, help and guidance) and low levels of negative features (i.e., conflict) (Berndt, 2002; Parker & Asher, 1993). These features of friendship seem to contribute to children's behavior in school and academic achievement. One study showed that greater friendship quality in the fall predicted fewer teacher-reported internalizing, externalizing, and social problems in the spring of the school year in fifth to eighth grade students (Waldrip, Malcolm, & Jensen-Campbell, 2008).

Other studies have found that friendship quality is associated with greater school adjustment. High-quality, stable friendships in sixth grade predicted positive adjustment to seventh grade (Berndt, Hawkins, and Jiao, 1999), and high-quality friendships predicted greater involvement in the classroom for students in the seventh and eighth grades (Berndt & Keefe, 1995). The increase in school involvement and adjustment however, does not seem to help children's grades. Friendship quality was not associated with increases in academic grades for sixth grade students followed through their seventh grade year (Berndt, Hawkins, & Jiao, 1999). Although this longitudinal study did not find an association between friendship quality and grades, cross-sectional studies have shown that friendship quality is related to academic grades and goals. Two studies showed that friendship quality was concurrently associated with academic grades in seventh and eighth grade students (Berndt & Keefe, 1995) and achievement goals in seventh grade students (Levy-Tossman, Kaplan, & Assor, 2007). These findings suggest that, overall, friendship quality is associated with children's social and academic functioning, but that some findings may be due to single time point study designs. Findings differed by academic outcomes, as friendship quality was associated with increases in school adjustment and involvement, but not with increases in grades. Additionally, these studies examined students in the fifth through eighth grades. Thus, associations between friendship quality and positive functioning are not well understood prior to fifth grade, and further investigation is needed to distinguish the significance of friendships earlier in development.

Thus, although theory suggests that friendship quality is important for children's positive development in middle childhood, extant research has focused mainly on friendships in adolescence. Friendships play a large role in adolescent development, as adolescents explore their identity and autonomy, and often look to their peers to make decisions regarding their

behavior and develop autonomy outside their family (Blos, 1967; Erikson, 1968). Research on friendship quality has therefore tended to focus on older children and adolescents (Berndt, 1996), leaving the question of whether friendship quality also promotes social and academic functioning for children in middle childhood in need of research. Close friendships develop much earlier than adolescence (as discussed above, around age eight or the third grade), and may serve as a developmental springboard for future friendships. Moreover, the security of earlier relationships tends to be linked to the quality of relationships formed later in life (Ainsworth, 1989; Collins & Sroufe, 1999), and thus the framework and expectations about friendships that children develop in middle childhood likely extend into adolescence. Understanding the initial foundations of friendships is thus needed for informing our knowledge of the developmental significance and relevance of friendships for positive development.

### **1.3 VARIATIONS IN ASSOCIATIONS OF FRIENDSHIP QUALITY AND SOCIAL AND ACADEMIC FUNCTIONING**

Overall, friendship quality appears to be associated with social and academic functioning. These associations may vary, however, based on children's relationships with the important adults in their life, the child's age, the availability of support from a close friend throughout the school day, and the child's level of academic engagement. Specifically, friendship quality may be a unique contributor to children's positive functioning over and above their relationships with their mother and teachers. Friendship quality may also become more strongly associated with positive functioning as children develop. In addition, children who share a classroom with their close

friend may enjoy greater social and academic functioning than children with less proximity to their close friend during the school day. Friendship quality may also be differentially associated with social functioning and academic achievement across children's engagement levels. Investigating the circumstances in which friendship quality may have varying effects for children may shed light on the developmental salience and importance of friendships for children in middle childhood. The present study explored the moderation of friendship quality by mother- and teacher-relationship quality, age, school context, and engagement.

### **1.3.1 Friendship quality and relationship quality with mother and teachers.**

Ecological theory and numerous studies suggest that relationships with other important people in children's lives, particularly parents and teachers, are greatly important for children's development (Bronfenbrenner, 1979; NICHD ECCRN, 2003; Pianta & Stuhlman, 2004). However, the friendship literature has tended to investigate friendships independent from mother and teacher relationships, and thus the unique contribution of friendships to children's positive functioning remains unclear. Although friendships seem to play a significant role in development, they may not independently promote children's positive functioning over and above the important relationships that children in middle childhood share with the adults in their lives. Thus, a fuller ecological approach is needed to more accurately distinguish the effects that friendship quality has on children's social and academic functioning. A few studies that have examined both friendships and mother-child relationships simultaneously have indicated mixed findings regarding whether friendship quality uniquely contributes to children's positive functioning. In an analysis comparing associations between supportive relationships with

mothers and classmates and sixth-grade students' self-esteem, Van Aken and Asendorpf (1997) found that both mothers and classmates uniquely contributed to children's feelings of well-being, but that mothers were twice as influential as age-mates. Another study, however, found that only support from mothers predicted adolescents' self-esteem when relationships with best friends, fathers, and siblings were included in the model (Barrera, Chassin, & Rogosch, 1993). Research has also compared the support children may receive from both teachers and classmates. One study showed that support from both teachers and peers was associated with middle school students' social and academic motivation (Wentzel, Battle, Russell, & Looney, 2010). However, each of these studies employed a cross-sectional design and examined friendships with either mother or teacher relationships, but not both of these important adult relationships. The current study sought to extend this work by examining associations between children's friendships and social and academic functioning throughout multiple years during middle childhood using an ecologically-based model that investigated whether friendship quality contributes to social and academic functioning over and above relationship quality with both mothers and teachers.

In addition to uniquely contributing to children's social and academic functioning, friendship quality may magnify the benefits of high-quality mother and teacher relationships. Some research has suggested that relationships are multiplicative, such that the strength of the association between a relationship and functioning may be enhanced or attenuated by another relationship (Durlak, 1998; Prinstein, Boergers, & Spirito, 2001). The support and intimacy provided by a high quality friendship may fortify the closeness of relationships with mothers or teachers to produce even greater social and academic functioning. This is consistent with ecological theory, which posits that there is developmental significance in the mesosystem-level interactions between important contexts in children's lives. This also reflects attachment theory,



which suggests that children's relationship models carry over into other relationships (Ainsworth, 1989). Children with high quality relationships with mothers and teachers may be more likely to have high quality friendships, and the benefits of these relationships may compound to produce even greater functioning.

Research on enhanced functioning for children with both high-quality friendships and high-quality mother relationships is mixed. In one study, children in the second grade with higher quality relationships with both their mother and friends showed more positive psychological adjustment than children with low quality relationships (Stocker, 1994). Another study indicated that behavioral and academic adjustment was enhanced for adolescents in the sixth, ninth, and twelfth grades who had positive relationships with their mother, father, and best friend than for adolescents with fewer positive relationships (Laursen & Mooney, 2008). Thus, high-quality relationships with multiple sources of support may produce greater functioning. Other studies, however, have found that friendship quality does not compound benefits of high-quality mother relationships. One study showed that friendship quality did not enhance social engagement or lesson problem behaviors for second grade children who were securely attached to their mother (Booth, Rubin, & Rose-Krasnor, 1998). In addition, support from classmates did not predict greater self-esteem for sixth graders with supportive mother relationships (Van Aken and Asendorpf, 1997), and support from close friends was not associated with greater educational resilience for adolescents with close relationships with their parents (Crosnoe & Elder, 2004). These conflicting findings do not appear to be explained by differences in age or source of support (friend vs. peers), and all of the studies used child reports of relationship quality. Also, all of these studies assessed friendship quality and children's functioning at a

single time point. Examining these associations over time may answer questions about whether a high quality friendship enhances the benefits of a high-quality mother throughout development.

Having high friendship quality along with a positive relationship with a teacher may also be particularly helpful for children's social and academic functioning. Receiving emotional and instructional aid from two sources of support may enhance the effects of supportive relationships and provide children with even greater security to explore the classroom, help in assignments tailored to the child's needs and abilities, and confidence and self-esteem to take risks and persist in challenging work. Thus, high friendship quality may heighten the effects of a high relationship quality with a teacher to promote greater social and academic functioning than having one supportive relationship. However, one study that examined interactions between teacher and peer support found no moderation effects, indicating that receiving support in one of these relationships did not intensify the effects of support in the other relationship to produce greater academic and social motivation for middle school students (Wentzel, Battle, Russell, & Looney, 2010). Wentzel and colleagues (2010), however, examined support from peers. Support from a close friend may be more strongly related to children's well-being than support from peers due to the more intimate and less transitory nature of friendships. Also, this study examined children's relationships and motivation at single time point. Following children across several grade levels will extend this work to examine whether these associations may develop over time.

### **1.3.2 Friendship quality and age.**

Friendship quality may become more or less important in promoting social and academic functioning as children progress toward adolescence. Adolescents report greater friendship

quality and intimacy than children in middle childhood (Berndt, 2002; Buhrmester, 1998), and these greater levels of friendship quality may be related to improvements in their behavior and emotional functioning and performance in school. Adolescents are often consumed by their beliefs that their flaws are on display for their peers to judge and thus are particularly concerned with fitting in. The feelings of support and intimacy afforded by a close friend may provide self-confidence, allowing adolescents to engage more fully in the classroom and spend their energy on their prosocial goals instead of focusing on the perceptions of their peers. Thus, friendship quality may more strongly predict children's social functioning and academic achievement as children near adolescence.

Alternatively, friendship quality may be particularly significant during the early middle childhood years, when children gain a new focus on friends and form their first close relationships with age-mates. As children begin to focus more on their friends, acceptance becomes a priority (Sullivan, 1953). Feelings of support and companionship with a close friend may be particularly important for children's positive development during this time and promote positive behavior and achievement by allowing children to focus their attention on engaging in school and activities instead of feelings of loneliness and exclusion. Younger children may also be especially apt to use their new abilities for self-comparison with their age-mates (McHale, Dariotis, & Kauh, 2003; Sullivan, 1953), and a supportive friendship may help promote children's positive functioning as they come to terms with their strengths and weaknesses. Although cross-sectional studies suggest that friendship quality may be a stronger supporter of positive functioning as children develop, friendship quality may be equally supportive of children's positive development throughout middle childhood. Without longitudinal studies,

however, the developmental significance of friendship quality for children's functioning as they grow is yet to be determined.

Research on children's friendship quality has tended to examine children over relatively short time spans, generally following children throughout a school year or calendar year (e.g., Berndt, Hawkins, & Jiao, 1999; Berndt & Keefe, 1995). This method examines associations of friendship quality and positive functioning over time, yet the short time frame does not address how friendship quality may support children's functioning across several grade levels. Detection of age moderation of the association between friendship quality and social and academic functioning would provide information on how friendship quality may be more or less supportive of children's social and academic functioning across development. In addition, discovery of how the importance of friendships for positive functioning changes over time may hold meaningful implications for interventions and youth programming to focus efforts on supporting and enhancing friendships at ages at which they are most salient for promoting positive youth development.

### **1.3.3 Friendship quality and school-based friendships.**

Sharing a classroom with a friend may provide instrumental and emotional support for children throughout the school day, and may serve as a secure base from which children can explore their classroom and school surroundings (Howes, 1988). Children may be especially apt to receive instrumental support from a close friend who shares their classroom. For example, a child with a close friend in the classroom may better master a new concept by receiving individualized help and guidance from the friend. Alternatively, in-classroom, in-school, and out-of-school

friendships may equally support children's functioning if it is merely important for children to know that they have support from a close friend, even if they are not able to interact with their friend during the school day (Sullivan, 1953). A child may gain self-confidence and emotional security knowing his or her friend cares for him or her, and will provide support during recess or after school if the children do not share the same classroom or school. Thus, the context in which the friendship takes place has implications for the importance of psychological and physical proximity to a close friend for children's development. Research on friendships has tended to focus on children's friendships with other children at their school (Rubin, Bukowski, & Parker, 2006). Specifically, in studies on friendship, children usually nominate their friends from a list of children who share their classroom or attend their school (e.g., Altermatt & Pomerantz, 2003; Wentzel, Barry, & Caldwell, 2004). This practice is often done for practical reasons, so that children's nominations include children who are easily accessible to researchers. In some studies, children may nominate another child who is not participating in the study as their close friend. These study children, then, are not included in analyses (e.g., Berndt, Hawkins, & Jiao, 1999; Berndt & Keefe, 1995). Thus, the association between friendship quality and children's functioning may be attributed to having one's close friend in proximity throughout the school day.

A few studies comparing associations between in- and out-of-school friends and social and academic functioning have found that in-school friends better support children's functioning. For example, a study by East and Rook (1992) showed that sixth graders who were well-accepted by their classmates had higher friendship quality with their in-class friend than students who were isolated by their classmates at school. However, both accepted and isolated children reported the same level of friendship quality with an out-of-school friend. The isolated children,

nonetheless, displayed more internalizing and socioemotional problems than did children who were accepted at school (East & Rook, 1992), indicating that proximity to a close friend during the school day may be developmentally supportive for children. In addition, Van Aken and Asendorpf (1997) found that low support from classmates was related to sixth-grade students' low self-esteem, but found no association between supportive peers outside of school and self-esteem. The authors suggested that support from friends in solving school-based problems may contribute more to children's self-esteem than support in coping with problems outside the domain of school (Van Aken and Asendorpf, 1997). These two studies indicate that both the emotional and instrumental support that children may more readily receive throughout the school day if they are in close physical proximity to their friend is particularly important for children's social functioning. However, these studies were cross-sectional, and the developmental importance of having a close friend in proximity throughout the school day for children's positive social functioning needs further investigation.

Having close friends in school also appears to support academic functioning. A study examining the association between percentage of in-school friends (compared to out-of school friends) and GPA found that students with more in-school friends had higher GPAs, and that students with higher GPAs had more in-school friends (Witkow & Fuligni, 2010). This study was done with high school seniors, and the authors suggested that future studies follow children earlier in their academic careers and over longer periods of time to better understand the associations between school-based friendships and academic achievement. Children in middle childhood may receive the same emotional and instrumental support provided by friendships in adolescence that allows them to be successful in the classroom. Thus, research is needed to extend the findings on school-based and out-of-school friendships and address whether

proximity to a close friend during the school day may be more supportive of children's positive functioning earlier than sixth grade. The present study examined the importance of proximity to a close friend throughout the school day for children's social and academic functioning during middle childhood. Also, there appears to be a complex relationship between proximity and friendship quality, such that a close friendship with an in-class or in-school friend may be developmentally supportive for children's functioning compared with a close friendship outside of school. The present study investigated whether proximity moderates the association between friendship quality and social and academic functioning.

#### **1.3.4 Friendship quality and academic engagement.**

In light of the benefits of friendships discussed throughout this paper, high quality friendships may be particularly advantageous for some children. One characteristic may be a child's level of engagement in school activities and assignments. Specifically, children's cognitive and behavioral engagement, such as their investment in mastering difficult tasks and exertion of effort and persistence (Fredricks, Blumenfeld, & Paris, 2004), may be enhanced through the support of a high-quality friendship. Several studies have shown that friends enhance children's engagement and persistence in challenging tasks, indicating that friendship may promote children's task engagement (Azmitia & Montgomery, 1993; Newcomb & Bagwell, 1995). Thus, children with lower levels of engagement may benefit from having a high quality friendship that supports their agency and persistence in difficult tasks. As discussed above, friendships provide children with the security and confidence to more fully explore their environment (Parker and Asher, 1993), and the support and guidance provided by a high quality friendship may help a

child believe he or she can successfully complete school assignments and engage more deeply and for longer periods of time in the classroom. A caring friend may also promote a child's more persistent efforts to regulate his or her behavior and cooperate with others. Children with lower levels of engagement may thus have greater functioning if they have more supportive friendships than if their friendships are lower in quality. Research, however, has generally not examined child characteristics that may make friendships especially pertinent for their positive functioning and the present study sought to address this gap by investigating whether children with lower engagement display more positive social and academic functioning if they have a higher quality friendship than a lower quality friendship.

#### **1.4 ANALYTIC CONSIDERATIONS FOR INVESTIGATING FRIENDSHIP QUALITY**

Although research has suggested that friendship quality is associated with social and academic functioning, several methodological considerations warrant further investigation. Extant research has tended to rely on analyses of adolescents' school-based friendships over shorter time frames, and examine friendships in isolation from other significant relationships. Past work has also been limited by reliance on between-child analyses. That is, studies have indicated that children with greater levels of friendship quality also have greater levels of social and academic functioning, compared with children with lower levels of friendship quality. The limitation of between-child comparisons is that they may be subject to omitted variable bias, such that a third variable (e.g., child social ability) may be responsible for the association between the independent and



dependent variables of interest (Duncan, Magnuson, & Ludwig, 2004). It may be the case that child sociability contributes to both greater friendship quality and higher social and academic functioning, and failure to take sociability into account confounds the link between friendship quality and child functioning. Duncan and colleagues have recommended including a host of covariates that may contribute to omitted variable and selection bias in analyses (Duncan, Magnuson, & Ludwig, 2004; NICHD ECCRN & Duncan, 2003). Thus, the present study controlled for child, family, and teacher characteristics that are associated with children's friendships or their social and academic functioning.

Several characteristics of children were included as covariates. As discussed above, relationships with adults are important for children's development, and not accounting for their association with children's functioning may have over-estimated the significance of friendships for promoting children's social and academic functioning in past research. Thus, the quality of the mother-child and teacher-child relationships were included to assess the independent contribution of friendship quality to supporting children's positive functioning in the presence of these important relationships with adults. In addition, children's race/ethnicity and gender have been associated in previous studies with the quality of their friendships (Parker & Asher, 1993; Sharabany, Gershoni, & Hofman, 1981; Way & Chen, 2000), as well as their social and academic functioning (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999; NCES, 2011). Other characteristics of children were included to reduce the risk of omitted variable bias, including aspects of children's personalities. In past work, children's temperament and perceptions of social situations have been shown to affect their ability to form and maintain positive relationships (Buss & Plomin, 1984; Crick, & Dodge, 1994). Another potential confounding factor of children's friendships and positive functioning is the stability of the friendship (Berndt,

Hawkins, & Jiao, 1999). The amount of time the child maintained their friendship was thus included in analyses. A host of family factors have also been shown to play a role in children's functioning. Mother age, education, marital status, personality, depression, income, and family size have been linked with children's socioemotional functioning and achievement, particularly through the quality of parenting and cognitive stimulation mothers are able to provide to their children (Bentley, Fox, & Platz, 1995; Civic & Holt, 2000; Davis-Kean, 2005; Kochanska, Clark, & Goldman, 1997). These family factors tend to covary with children's functioning and were included in analyses so that they did not confound associations between children's demographic backgrounds and their social and academic functioning. Finally, teachers' years of teaching experience have been associated with their ratings of children's functioning and were included in analyses (Mashburn, Hamre, Downer, & Pianta, 2006).

Although the inclusion of covariates can help reduce the risk of omitted variable bias, it is impossible to ensure the inclusion of every possible confounding factor in analyses. Within-child analyses have been suggested as an effective method of decreasing bias from omitted variables, and several recent studies have used within-child analyses with non-experimental data by examining whether changes in an individual child's parenting experiences or relationships with teachers are associated with changes in that child's functioning over time (e.g., Dearing, McCartney, & Taylor, 2006; El Nokali, Bachman, & Votruba-Drzal, 2010; Maldonado-Carreño & Votruba-Drzal, 2011). Although within-child analyses cannot reduce the threat of bias from omitted variables for time-varying characteristics or from reciprocal causation, these analyses eliminate the bias associated with unobserved characteristics that are stable (i.e., fixed) over time (Allison, 1990; Singer & Willet, 2003). The present study examined both between- and within-

child associations of children's friendship quality with social functioning and academic achievement across middle childhood.

## **1.5 SIGNIFICANCE AND RESEARCH AIMS**

Relationships are integral to development and high-quality relationships provide children with security and emotional and instrumental support. Relational needs are met by parents, teachers, and other caregivers early in development, yet friends become a developmentally-salient context when children reach middle childhood. Prior work has indicated that children who are able to meet this need successfully by developing high-quality friendships tend to have more positive social and academic functioning. This work, however, has focused on adolescents and the developmental significance of friendships for children during middle childhood remains unclear. The present study sought to address this gap in the literature by examining children's friendships across this developmental period. Additionally, although higher levels of friendship quality have been associated with more positive functioning, it is not known whether increases in friendship quality are associated with increases in social and academic functioning over time. This study conducted within-child analyses in attempts to make causal inferences about children's friendship quality and positive functioning to inform school and youth programming and interventions.

An ecologically-based model was used to extend the extant work on friendships to examine whether friendship quality uniquely contributes to children's positive functioning above their relationships with their mother and teachers. A main goal of this study was also to advance

our understanding of friendships that take place outside the classroom and school, as well as whether friendship quality may be particularly helpful for children with less engagement. This study sought to extend our understanding of friendships so that, if friendships uniquely contribute to improvements in children's social and academic functioning during middle childhood under a variety of circumstances and in the presence of other possible mitigating factors, investments can be made in promoting friendship quality as an avenue by which to support children's development.

The present study addresses six primary aims. The first aim examines between- and within-child associations between friendship quality and social and academic functioning throughout middle childhood. Specifically, this aim examines whether higher average levels of children's friendship quality are associated with higher average levels of social functioning and academic achievement from third through sixth grades, controlling for factors that may confound the association between friendship quality and social and academic functioning (between-child comparison). Between-child analyses of older children indicate that friendship quality is associated with positive functioning (Berndt, Hawkins, & Jiao, 1999; Berndt & Keefe, 1995; Levy-Tossman, Kaplan, & Assor, 2007; Waldrup, Malcolm, & Jensen-Campbell, 2008) and theory suggests that friendships may become important for children in middle childhood (Sullivan, 1953). Thus, I hypothesize that children with higher levels of friendship quality will have higher levels of social and academic functioning. This aim also examines whether changes in friendship quality are related to changes in children's social and academic functioning during middle childhood (within-child trajectory). Past longitudinal, between-child analyses suggest that higher levels of friendship quality are associated with higher levels of positive functioning (e.g., Berndt, Hawkins, & Jiao, 1999; Waldrup, Malcolm, & Jensen-Campbell, 2008), and I

hypothesize that increases in an individual child's friendship quality will be associated with increases in his or her social and academic functioning.

The second aim investigates whether friendship quality uniquely contributes to children's positive functioning over and above children's relationship quality with their mother and teachers. Specifically, this aim investigates whether children with higher levels of friendship quality have higher levels of social and academic functioning when average levels of mother and teacher relationship quality are included in the model (between-child comparison). This aim also investigates whether increases in a child's friendship quality are linked with increases in his or her social and academic functioning when changes in mother and teacher relationship quality are included in the model (within-child trajectory). Friendship quality appears to be a developmentally-salient support for children in middle childhood in addition to their relationships with their mother and teachers, and I hypothesize that greater levels and growth in friendship quality will uniquely contribute to greater levels and growth in social and academic functioning when mother and teacher relationship quality are included in the model.

The third aim examines whether mother-child and teacher-child relationship quality moderate associations between friendship quality and social and academic functioning to investigate whether friendships may have a multiplicative effect during middle childhood. Specifically, this aim examined whether greater levels of friendship quality are associated with even greater levels of functioning when children also have greater levels of mother or teacher relationship quality (between-child comparison). This aim also investigated whether increases in friendship quality are associated with even greater increases in functioning if children also have increases in their relationship quality with their mother or teacher (within-child trajectory). Research is mixed regarding whether friendship quality might enhance the positive effects of

high-quality mother-child relationships to produce greater functioning, and thus these analyses were exploratory. One cross-sectional study indicated that friendship quality does not intensify the benefits of high-quality teacher-child relationships (Wentzel, Battle, Russell, & Looney, 2010), and the longitudinal analyses of this association in the present study are also exploratory.

The fourth aim examines whether age moderates friendship quality to determine whether the importance of friendship quality for a child's social and academic functioning becomes more important as they age (within-child trajectory). Studies have indicated that friendship quality increases between middle childhood and adolescence, and these increases may be linked with greater social and academic functioning. Thus, I hypothesize that friendship quality will become increasingly supportive for children's positive functioning as they progress through middle childhood.

The fifth aim investigates whether children with greater proximity to their close friend during the school day have greater social and academic functioning (between-child comparisons). The first part of this aim examines whether friend proximity is associated with higher levels of social and academic functioning. Previous research indicates that children with in-school friends display more positive functioning than children with out-of-school friends, and I hypothesize that greater proximity during the school day will be associated with greater functioning due to the emotional and instrumental support that children may more readily receive from their friend throughout the school day. That is, I hypothesize that children who share the same classroom as their close friend during middle childhood will display higher levels of social and academic functioning than children who share the same school and children who do not attend the same school as their close friend. This aim also investigates whether proximity moderates the association between friendship quality and social and academic functioning. Past

work suggests that high quality friendships with greater proximity during the school day may support greater functioning because children are able to develop self-esteem within the context of the classroom (Van Aken and Asendorpf, 1997), and I hypothesize that children with high-quality friendships that are classroom-based will display greater functioning than children with high-quality friendships that are school-based or out-of-school.

The final aim examines whether friendship quality may be particularly supportive for children with lower levels of engagement (between-child comparison). Research suggests that friends support children's engagement and persistence in challenging tasks (Azmitia & Montgomery, 1993; Newcomb & Bagwell, 1995), and I hypothesize that children with lower cognitive and behavioral engagement will display more positive social and academic functioning if they have higher-quality friendships than lower-quality friendships.

## **2.0 METHOD**

### **2.1 PARTICIPANTS AND PROCEDURES**

The present study used the NICHD Study of Early Child Care and Youth Development (NICHD SECCYD) dataset to examine the associations between friendship quality and children's social functioning and academic achievement throughout middle childhood. The NICHD SECCYD is a longitudinal study that followed 1,364 children and their families since their birth in 1991 to 2006. Mothers were recruited at hospitals after the birth of their child in ten cities across the United States. The study is not nationally representative; recruitment excluded children from multiple births, children who remained in the hospital for more than seven days after their birth, mothers who were younger than 18 years old at the time of the study child's birth, mothers not fluent in English, and families planning to move within three years. The study includes a comprehensive set of standardized assessments and questionnaires obtained from the study children and their primary caregivers and teachers. Assessments and interviews were conducted in laboratories and in children's homes, and questionnaires were mailed to teachers at least once a year throughout the study.

Although the NICHD SECCYD was originally designed to examine the effects of childcare on children and their families, a host of child assessments were collected at regular intervals throughout data collection, making this dataset ideally suited to examine children's



development over time. Measures of children's friendship quality were collected every year for four years, from the third to sixth grades. Information on the stability of their friendships, and whether their friendships were school- or classroom-based, was also collected during this time. Measures of children's relationships with their mother and teachers were collected each year throughout third to sixth grades, and teachers completed assessments of children's social and academic functioning during the same period. Assessments of children's temperament and social and academic functioning before middle childhood, as well as a wide set of information on children's families, were collected in this study. Thus, the associations between friendship quality and children's functioning across middle childhood could be examined using this large, economically- and geographically-diverse sample.

The initial NICHD SECCYD sample contained 1,364 children and their families. However, attrition and item-level nonresponse occurred and led to missing data. At the end of sixth grade, 1,061 families remained in the study (78% retention rate after 12 years). In the present study, the percentage of children with data on at least one measure during middle childhood is as follows: 79% for outcomes, 80% for friendship quality, 80% for mother-child relationship quality, and 78% for teacher-child relationship quality. Ninety-six percent of children had data on at least one of the covariates measured over the course of the study. Statistical comparisons of children who were missing data on outcomes, predictors, or covariates and children who had complete data revealed that children with complete data were generally less disadvantaged. Specifically, their mothers were more educated ( $t(1361) = 3.63, p < .001$ ), more likely to be married ( $\chi^2(1) = 11.86, p = .001$ ), and older at the child's birth ( $t(1362) = 3.21, p = .001$ ). Children with complete data were also more likely to be White (than Black,  $\chi^2(1) = 21.00, p < .001$ ) and come from families with higher incomes ( $t(1272) = 2.19, p < .05$ ).

To decrease bias caused by missing data, developmental researchers recommend the use of imputation of missing data in longitudinal datasets (Jelicic, Phelps, & Lerner, 2009; McCartney, Burchinal, & Bub, 2006). Multiple imputation was used in the present study, as other methods of handling missing data, such as listwise deletion or mean imputation, have been criticized for biasing estimates, misrepresenting statistical power, and leading to invalid conclusions (Acock, 2005; Rubin, 1987; Widaman, 2006). Data on all independent and dependent variables were imputed. This approach has been recommended by Allison (2008) and Schafer and Graham (2002), who argue that the nature of missing data for both independent and dependent variables are essentially equal and thus these variables should be treated the same. Five datasets were imputed using Stata 12. Five datasets were deemed sufficient for the level of missing data in the present study, based on Rubin's relative efficiency calculation (1987). Hierarchical linear modeling was then conducted using HLM 6.08.

## 2.2 MEASURES

Assessments were collected on children's friendship quality and social and academic functioning from third through sixth grades, as well as a host of covariate variables.

**Friendship measures.** From third to sixth grades, data on friendship quality, as well as friendship context and stability, were obtained from children. During a lab visit at each grade, children named their best friend and completed a self-report of friendship quality in reference to this named friend to discourage children from reporting their answers based on an internal representation of an idealized friendship or a composite of several different friendships (Parker

& Asher, 1993). Children's perceptions of their friendship quality are generally used in friendship research to assess their relationships with close friends. Some research has demonstrated that self-rated measures of relationships are stronger indicators of functioning than other-reported measures (Barrera, 1981; Pelegrina, Garcia-Linares, & Casanova, 2003), possibly because children themselves have exclusive access to the relationship across time and setting (Furman, 1984).

*In- and out-of-school friendships and friendship stability.* At third, fourth, and fifth grades, children reported whether their close friend was in or outside their classroom or school. Children's reports of whether their friend attends their school and whether or not their friend is in their classroom were used to create three categories: *same school and same classroom* (omitted group), *same school and different classroom*, and *different school*. Because children were not asked about the proximity of their friend at sixth grade, changes in proximity across middle childhood could not be examined in this study. Thus, averages were created to indicate the percent of time during middle childhood that children spent in each category of proximity throughout the school day to their close friend.

The stability of the child's friendship across third through sixth grades was assessed by examining whether the friend the child listed at sixth grade was also listed as a friend in third, fourth, and fifth grades. Scores ranged from 0 to 3, with a score of 0 indicating that the child had never named the friend before (47% of children in the sample), and 3 meaning that the study child had named the same friend at third, fourth, and fifth grades (13.7%). Of the remaining children, 14.8% had reported the same friend twice before, and 24.5% had reported the same friend once before. The friendship longevity variable in the NICHD SECCYD dataset was used

in these analyses but called stability to align with previous work; the friendship stability variable from the dataset was not used because the categories were not as helpful for the present study.

***Friendship quality.*** Friendship quality was assessed by children's reports on the Friendship Quality Questionnaire (FQQ; Parker & Asher, 1993). The FQQ has been shown to have a test-retest reliability of .75 and can be used with children in grades third through sixth (Furman, 1996). Research assistants administered this measure to children, and high internal consistency was obtained at each time point ( $\alpha = .87-.91$ ). The FQQ assesses the level of closeness and conflict, as well as instrumental aid, the child perceived in the relationship with his or her close friend and consists of six subscales: Companionship and Recreation ("\_\_\_ and I always sit together at lunch" or "If \_\_\_ was in my school/class, we would always sit together at lunch"), Validation and Caring ("\_\_\_ and I make each other feel important and special"), Help and Guidance ("When I'm having trouble figuring something out, I usually ask \_\_\_ for help and advice"), Intimate Disclosure ("When I'm mad about something that happened to me, I can always talk to \_\_\_ about it"), Conflict and Betrayal (reverse-scored; "\_\_\_ and I get mad at each other a lot"), and Conflict Resolution ("\_\_\_ and I always make up easily when we have a fight"). The measure contains 21 questions (20 questions, 1 practice) and is rated on a 5-point scale (1 = *not at all true* to 5 = *really true*). Higher scores indicate greater levels of friendship quality.

In sixth grade, eight items were added to the questionnaire to be more appropriate for use with adolescents. However, to keep the measure consistent across all time points in order to examine friendship quality across middle childhood, the eight additional items were not used in the present study. The total score at sixth grade was re-calculated to include only the 21 items used at third, fourth, and fifth grades.

**Outcome measures.** Teacher reports of children's social functioning and academic achievement were obtained in third, fourth, fifth, and sixth grades. These same measures were also collected at first grade and were included to control for omitted variable bias, which is discussed in detail in the Analytic Strategy section.

***Social functioning.*** Children's social functioning was assessed by teacher reports of social skills and behavior problems. The Social Skills Rating System (SSRS) Social Skills Total standard score (Gresham & Elliott, 1990) measures children's cooperation, assertion, and self-control. Items on the SSRS were developed based on literature reviews and suggestions by clinicians, parents, and education professionals; the scale has demonstrated construct and convergent validity with other teacher rating scales (Gresham & Elliot, 1990). This scale contains 30 items rated on a 3-point scale which indicate the frequency at which socially-acceptable behaviors occur (0 = *never*, 1 = *sometimes*, and 2 = *very often*). Higher scores indicate greater frequency of positive social behaviors. High internal consistency at all grades was obtained ( $\alpha = .93-.94$ ).

Teachers also assessed children's problem behaviors using the Teacher Report Form (TRF; Achenbach, 1991), which includes items on children's withdrawn behavior, somatic complaints, anxious and depressed behavior, and delinquent and aggressive behavior. The TRF is widely accepted as reliable and internally consistent (Achenbach, 1991). The Externalizing and Internalizing standardized subscales from all grades were used in the present study. The Internalizing subscale ( $\alpha = .85-.87$ ) contains 35 items, and higher scores indicate greater frequency of withdrawn behavior, somatic complaints, and anxious or depressed appearance. The Externalizing subscale ( $\alpha = .95$ ) contains 34 items, and higher scores indicate more delinquent

and aggressive behaviors. Both subscales are rated on a 3-point scale (0 = *not true*, 1 = *somewhat or sometimes true*, and 2 = *very true or often true*).

***Academic achievement.*** Children's academic achievement was measured by report cards completed by the child's teachers in each grade. The Mock Report Card (Pierce, Hamm, & Vandell, 1999) assesses children's school performance in Reading, Oral Language, Written Language, Math, Social Studies, and Science. Internal consistency at each grade was high ( $\alpha = .93-.95$ ). A standardized report card was used so that children's grades can be compared across schools. Each academic subject was rated on a 5-point scale (1 = *below grade level* to 5 = *excellent*). The Reading and Math scores were used in analyses. Correlations between these two subjects ranged from .69 to .70 at each grade throughout middle childhood.

***Covariates.*** A host of child, family, and teacher characteristics were included in analyses.

***Child characteristics.*** Child age in months at the time of each outcome assessment was included in analyses. Child gender and race/ethnicity (White, Black, Hispanic) were also included as dummy variables. It should be noted that the term "Hispanic" is used in the present study because participants identified themselves with this term when race and ethnicity data was collected in 1991. However, the term "Latino" is more accurate and modern if data were collected more recently. Child temperament was also included as a covariate. Temperament was reported by mothers when their child was six months old using an adaptation of the Infant Temperament Questionnaire (Carey & McDevitt, 1978), which measures approach, activity, intensity, mood, and adaptability ( $\alpha = .81$ ). Higher scores indicate a more difficult temperament. Children's perception of hostile intent in socially ambiguous situations was also used as a covariate in analyses. Children completed the Child's Intent Attributions and Feelings of Distress

measure (Crick, 1995) at the third, fourth, and fifth grade data collection time points. This measure contains stories of potential overt aggression and rejection (e.g., someone spills milk all over you) and children report on whether the intent behind the action was hostile or benign, whether the action was intended to be mean or not, and how mad the child would be if the action happened to him or her. For the present study, the Total Hostile Intent subscale was used because it had moderate internal consistency across grade levels ( $\alpha = .75-.79$ ); the Feelings of Distress subscale was not used in analyses due to only modest internal consistency across grade levels ( $\alpha = .59-.60$ ). Scores on the Total Hostile Intent subscale range from 0 to 1, with higher scores indicating greater likelihood of perceiving situations as having hostile intent. An average Hostile Intent score across grades was calculated and used in analyses.

Children's engagement was assessed by the Mother-Child Interaction Task conducted when children were in third grade. Children completed a discussion task of family rules and a problem-solving activity with their mothers, which was videotaped and coded by trained observers. Parenting quality, quality of the dyadic interaction, and children's behaviors were rated on a scale of 1 (*very low*) to 7 (*very high*). The agency and persistence that children displayed in both tasks were made into a composite Task Orientation score, which was used in analyses in the present study. Agency was assessed as a child's eagerness to problem solve and confidence in his or her ability to successfully complete the task. Persistence was assessed as the child's active engagement and persistent work towards completing the task. Higher scores indicate more agency and persistence, and high internal reliability was found ( $\alpha = .88$ ). An observational measure of children's agency and persistence provides an objective score of children's engagement in a challenging yet typical task that children likely encounter in their everyday lives. Additionally, the agency and persistence components of this measure align well

with current conceptualizations of cognitive and behavioral engagement (Fredricks, Blumenfeld, & Paris, 2004).

***Family characteristics.*** When the study child was one month old, mothers reported their years of educational attainment and age at their child's birth. Mothers' hours of employment per week and marital status (1 = *married*, 0 = *unmarried*) were collected at the third, fourth, fifth, and sixth grade data collection time points. The number of children in the household and household income-to-needs ratios were also reported in third, fourth, fifth, and sixth grades.

Measures of mothers' personality and emotional well-being were also included as covariates in analyses to account for the association between these factors and the parenting mothers provide to their child. When children were six months old, mothers completed the NEO Personality Inventory (Costa & McCrae, 1985), which includes subscales of Neuroticism ( $\alpha = .84$ ; "Sometimes I feel completely worthless"), Extraversion ( $\alpha = .75$ ; "I really enjoy talking to people"), and Agreeableness ( $\alpha = .74$ ; "I generally try to be thoughtful and considerate"). The NEO measure contains 36 items rated on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*); higher scores on each subscale indicate more neuroticism, extraversion, and agreeableness, respectively. Each of these subscales were used in the model to account for mother personality. Mothers also reported their feelings of depression when their children were in third, fifth, and sixth grades. Mothers' depression was measured using the CES-D (Center for Epidemiological Studies Depression Scale; Radloff, 1977), which includes 20 items on the number of days during the past week the respondent felt symptoms of depression and is rated on a 0 to 3 scale (0 = *rarely*, 3 = *most*). Scores range from 0 to 60, with higher scores indicating greater levels of depressive symptoms. Internal reliability at each of these grades was high ( $\alpha = .90-.91$ ). Mothers' average depression score across these time points was calculated and used for analyses.



The quality of the relationship the child shares with his or her mother was also included to examine whether friendship quality plays a unique role in children's functioning over and above the mother-child relationship. Mothers reported on the level of closeness and conflict with their child using the Child-Parent Relationship Scale, which was adapted for the NICHD SECCYD from the Student-Teacher Relationship Scale (Pianta, 1992). Mothers completed this scale when their child was in the third through sixth grades, and the measure contains 15 items rated on a scale of 1 to 5 (1 = *definitely does not apply*, 5 = *definitely applies*). The Child-Parent Relationship Scale contains two subscales, Closeness (characterized by warmth and emotional closeness) and Conflict (characterized by negative emotions and low communication). The items on the Conflict subscale were reverse-coded and the two subscales were combined to create a total positive relationship score. Internal reliability at each time point was high ( $\alpha = .81-.85$ ).

***Teacher characteristics.*** At each grade level, the child's teacher reported their teaching experience, which was measured by the total number of years of experience teaching full- or part-time in public and private schools. Teacher-child relationship quality was also included in analyses to examine whether friendship quality plays a unique role in children's functioning in comparison to teacher-child relationships. The child's teacher reported the level of closeness and conflict present in his or her relationship with the child at each grade using the Student-Teacher Relationship Scale (Pianta, 1992). This scale contains 15 items rated on a scale of 1 to 5 (1 = *definitely does not apply*, 5 = *definitely applies*). The Student-Teacher Relationship Scale contains two subscales, Closeness (characterized by warmth and emotional closeness) and Conflict (characterized by negative emotions and low communication). The items on the Conflict subscale were reverse-coded and the two subscales were combined to create a total positive

relationship score. Internal reliability for the total score at each time point was high ( $\alpha = .88-.89$ ).

In the NICHD SECCYD study, children reported their friendship quality, mothers reported their relationship quality with their child, and teachers reported their relationship quality with the study child at each grade throughout middle childhood. Although data availability precludes analyses of children's perceptions of all three of these relationships, these measures of relationship quality are widely used during middle childhood and consistently predict children's well-being.

### 2.3 ANALYTIC STRATEGY

Associations between children's friendship quality and social and academic growth trajectories throughout middle childhood were investigated using two-level hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002). Each outcome was estimated in a separate model and each model was conducted in HLM 6.08 using full information maximum likelihood estimation (Raudenbush, Bryk, Cheong, Congdon, & DuToit, 2004). The first models examine unconditional growth models to investigate whether there is significant variability in the trajectories of social functioning and academic achievement. These models were estimated using Equation 1:

$$(1) \quad Y_{it} = \pi_{0i} + \pi_{1i}Age_{it} + \varepsilon_{it}$$

In this equation, repeated measures of social and academic functioning were modeled as a function of child  $i$  at time  $t$ . The variable  $Age_{it}$  represents the child's age in months at each

assessment, centered within-child by subtracting the average age of the child across time points from the age of the child at each assessment. In these unconditional models, the child's average level of functioning across middle childhood was represented by the intercept ( $\pi_{0i}$ ) and the child's growth in functioning from third to sixth grades per month increase in age was represented by the slope ( $\pi_{1i}$ ). The intercept and slope were estimated at random at Level 2. All other Level 1 slope parameters were fixed at Level 2 to reflect the degrees of freedom available to estimate these parameters.

The next set of analyses examined the first two research aims. Research Aim 1 estimated conditional models to examine between- and within-child associations between friendship quality and social and academic functioning throughout middle childhood, controlling for child (gender, race/ethnicity, temperament, perception of hostile intent), family (income, number of children in the home, marital status, mother education, mother hours of employment, mother personality and depression, mother-child relationship quality), and teacher (experience, teacher-child relationship quality) characteristics. For the within-child analyses, repeated measures of friendship quality were used as predictors of social functioning and academic achievement at Level 1. Other time-varying child, family, and teacher characteristics were also used as predictors to control for their effects on children's functioning. Equation 2 depicts this model:

$$(2) \quad Y_{it} = \pi_{0i} + \pi_{1i}Age_{it} + \pi_{2i}FriendshipQuality_{it} + \pi_{3i}Child_{it} + \pi_{4i}Family_{it} + \pi_{5i}Teacher_{it} + \varepsilon_{it}$$

In this equation, all time-varying predictors were within-child centered by subtracting the average of the predictor for child  $i$  across all time points from the predictor for child  $i$  at time  $t$ . Within-child centering is a technique used to address omitted variable bias by accounting for differences among children that affect social and academic functioning over time (Raudenbush &

Bryk, 2002; Singer & Willet, 2003). The within-child associations between social and academic functioning and friendship quality and characteristics of children, families, and teachers were represented by the coefficients of  $\pi_{2i}$ ,  $\pi_{3i}$ ,  $\pi_{4i}$ , and  $\pi_{5i}$ . The statistical significance of the coefficient of  $FriendshipQuality_{it}$  indicates whether changes in friendship quality are associated with changes in social functioning and academic achievement over time.

The association of friendship quality and between-child differences in social and academic functioning over time was tested using Equations 3 and 4. These Level 2 equations examined variability in the intercept and slope terms of the Level 1 equation by adding individual children's average friendship quality as a predictor of these terms:

$$\begin{aligned}
 (3) \quad \pi_{0i} &= \beta_{00} + \beta_{01}AvFriendshipQuality_i + \beta_{02}AvChild_i + \beta_{03}AvFamily_i + \beta_{04}AvTeacher_i \\
 &\quad + \beta_{05}Outcome_i + r_{0i} \\
 (4) \quad \pi_{1i} &= \beta_{10} + \beta_{11}AvFriendshipQuality_i + \beta_{12}AvChild_i + \beta_{13}AvFamily_i + \beta_{14}AvTeacher_i \\
 &\quad + \beta_{15}Outcome_i + r_{1i}
 \end{aligned}$$

In these equations, between-child differences were tested by examining whether children with higher average levels of friendship quality have higher average levels of social functioning and academic achievement ( $\beta_{01}$ ), and whether these children display differential growth in functioning over time ( $\beta_{11}$ ). Also included in these Level 2 equations were measures of time-invariant child characteristics (i.e., race/ethnicity, gender, temperament), and average levels of time-variant family (i.e., marital status, employment), and teacher characteristics (i.e., teaching experience) to estimate between-child effects. Friendship stability was also included as a child characteristic to account for the amount of time the child has maintained a friendship with his or her close friend, and friend proximity during the school day was included to examine the effects of sharing the same classroom as a close friend. All Level 2 variables were grand-mean centered

so that the Level 2 intercepts represent adjusted means for the average child in the sample. Grand mean centering also aids interpretation by giving the intercept and slope terms meaningful values. However, unlike within-child centering at Level 1, grand mean centering at Level 2 does not reduce the threat of omitted variable bias. To address this concern, an earlier measure of the outcome at first grade was also included at Level 2 (*Outcome<sub>i</sub>*) to account for unmeasured variables that may have been present before middle childhood. The intercept and the age slope at Level 2 were estimated at random and the other Level 1 parameters were fixed because there were no theoretical reasons to expect their influence to differ across individual children.

The model described above is the full main effects model. Analyses were conducted hierarchically to examine selection effects that may confound associations between friendship quality and positive functioning. Model 1 contains covariates used in the existing friendship literature: age, gender, friendship stability, and race/ethnicity. Model 2 adds covariates that are associated with either friendships or children's positive functioning that may confound associations between friendship quality and social and academic functioning: temperament, perception of hostile intent, income, number of children in the home, mother marital status, mother education, mother hours of employment, mother personality and depression, and teacher experience. The final model, Model 3, adds mother-child and teacher-child relationship quality to examine the associations between friendship quality and positive functioning in the presence of other important relationships with adults. This final model addressed Research Aim 2, investigating the relative importance of friendship quality for children's functioning when mother-child and teacher-child relationship quality are considered. Within-child associations among friendship quality, mother- and teacher-relationship quality, and functioning were examined at Level 1 by entering individual levels of friendship quality, mother-child, and

teacher-child relationship quality. Between-child associations were also investigated in this analysis by entering average levels of friendship quality and average levels of mother- and teacher-relationship quality at Level 2. Comparing effect sizes in the final model for each relationship reveals the relative importance of each relationship for children's social and academic functioning. In addition, examining changes in effect sizes and significance of friendship quality from Models 1 to 3 reveals whether adding more covariates further explains associations between friendship quality and social and academic functioning.

The final models addressed the remaining research aims (3, 4, 5, and 6) by testing the moderation of friendship quality by mother- and teacher-relationship quality, age, context, and task engagement, respectively. Moderation was examined by creating interaction terms with centered variables, according to the guidelines recommended by Aiken and West (1991). Each moderation analysis was added separately to the full model (Model 3) to address each research aim. To address Research Aim 3 and examine whether friendship quality enhances relationship quality with mother and teachers to promote greater positive functioning throughout middle childhood, interaction terms between repeated measures of friendship quality and repeated measures of mother-child relationship quality, and between repeated measures of friendship quality and repeated measures of teacher-child relationship quality, were added as predictors at Level 1 in the full model to examine within-child effects. Interaction terms between average levels of friendship quality and average levels of mother-child relationship quality, and between average levels of friendship quality and average levels of teacher-child relationship quality, were also added at Level 2 in the full model to make between-child comparisons. To address Research Aim 4 and investigate whether the importance of friendship quality for promoting children's social functioning and academic achievement grows throughout middle childhood, the

interaction term between age and repeated measures of friendship quality was added as a predictor at Level 1 in the full model. To address Research Aim 5 and explore whether children with greater proximity to their close friend during the school day display greater social and academic functioning, the main effect of sharing a classroom with a close friend was examined in the full model at Level 2. Also, in separate analyses from the main effects model, interaction terms between the mean of the school-based friendship dummy variables (in-school but not in-classroom; out-of-school) and average friendship quality were added as predictors at Level 2 in the full model. To address Research Aim 6 and examine whether higher quality friendships may be particularly supportive of positive functioning for children with lower levels of engagement, an interaction term between engagement and average friendship quality during middle childhood was added as a predictor at Level 2 in the full model.

### 3.0 RESULTS

Descriptive statistics for the study sample demographics and outcomes are presented in Table 1. Males comprised 52 percent of the sample, and the sample was primarily White (81%). Mothers were on average 28 years old at the time of their child's birth, had about 14 years of education, and were employed an average of 27-28 hours each week during their child's middle childhood years. The sample tends to be of a higher SES, with average household income-to-needs ratios ranging from 4.25 to 4.50 ( $SD = 3.68$  to  $4.05$ ) throughout middle childhood. The majority of the mothers in the study were married during their child's third through sixth grade years (65-66%). Children's teachers during middle childhood had an average of about 15 years of teaching experience.

#### **Social and Academic Growth Trajectories across Middle Childhood**

Analyses began with unconditional growth models, which indicated that there was significant variability in the average scores and trajectories of social and academic functioning over time. The first column in Table 2 shows the average functioning score for the average child in the sample. The significant coefficients indicate that there was variability among children in social and academic functioning scores. The second column shows the average rate of change in social functioning and grades across middle childhood. The significant and negative slope coefficients for internalizing and externalizing problems and math grades reveal that these scores



decreased across middle childhood, whereas the significant and positive slope coefficient for reading grades reveal that reading scores increased across middle childhood. The non-significant slope coefficient for social skills suggests that social skills remained stable throughout middle childhood. As the chi-square tests indicated significant variability in the intercepts and slopes of social and academic functioning (except for the slope of internalizing problems), conditional models were conducted to explain variability in these terms. Unconditional models including quadratic slopes were also estimated to examine whether there was curvature in slopes. None of these models were significant, and thus all analyses were conducted using a linear function.

### **Research Aim 1: Between- and Within-Child Associations of Friendship Quality and Social and Academic Functioning**

Conditional models were estimated to examine between- and within-child associations of friendship quality and children's functioning throughout middle childhood. Between-child analyses investigate whether children with higher average levels of friendship quality display higher average levels (intercept) and greater gains (slope) in social and academic functioning across middle childhood, compared with children with lower levels of friendship quality. Within-child analyses, in contrast, explore whether increases in an individual child's friendship quality are associated with increases in that child's social and academic functioning throughout middle childhood.

To explore the effects of selection characteristics and relationships with mothers and teachers on associations between friendship quality and social functioning and grades, analyses were conducted hierarchically. Specifically, models were first run with friendship quality as the predictor of functioning, controlling for age, gender, race/ethnicity, and friendship stability. This model contains the typical covariates included in the literature exploring associations between

friendship quality and children's functioning (e.g., Berndt, Hawkins, & Jiao, 1999; Berndt & Keefe, 1995; Levy-Tossman, Kaplan, & Assor, 2007; Waldrip, Malcolm, & Jensen-Campbell, 2008). Model 2 includes additional covariates that have not been included in previous friendship literature, but are characteristics associated with children's friendships or social and academic functioning. Model 3 inserts mother-child and teacher-child relationship quality into the model to explore whether friendship quality remains a unique predictor of children's functioning when these other important relationships are considered. Comparisons of findings across these models yields information on the importance of friendship quality for children's social functioning and grades throughout middle childhood, accounting for changes in effect sizes and significance as other characteristics and relationships are incorporated in the models. Results for these conditional models for social functioning are displayed in Table 3 and for academic functioning in Table 4.

In the results below, effect sizes from Model 2 are shown. Model 2 investigates the effects of adding a host of covariates to the model that is generally used in friendship research. Model 2 is then compared with Model 1 to address changes in effect sizes and significance in associations between friendship quality and social and academic functioning when characteristics that may confound these associations are considered. Reductions in effect sizes indicate that selection may be at play, or that these child background and personality characteristics at least explain some of the association between friendship quality and positive functioning. Percent reduction in the effect size of friendship quality from Model 1 to Model 2 was examined to address these selection concerns. Overall, comparison of the models suggests that associations between friendship quality and social and academic functioning became weaker as additional

covariates were added to the models, indicating that selection factors explain some, but not all, of the variation in the associations between friendship quality and social and academic functioning.

### **Social functioning**

***Between-child differences.*** Results of the between-child analyses of associations between average levels of friendship quality and average levels (intercept) and rates of growth (slope) in internalizing and externalizing problems and social skills are displayed in Panel 1, Model 2 of Table 3. Children with higher average levels of friendship quality showed significantly lower average levels of internalizing problems ( $\beta = -0.10$ ). In Model 1, this association had an effect size of  $\beta = -0.11$ , indicating that adding covariates to the model reduces the association between friendship quality and internalizing problems by 9%. Children with higher levels of friendship quality also displayed significantly higher levels of social skills ( $\beta = 0.07$ ). This association had an effect size of  $\beta = 0.10$  in Model 1, indicating that adding covariates to the model reduces the association between friendship quality and social skills by 30%. There were no significant associations between average levels of friendship quality and average levels of externalizing problems. Between-child associations between average levels of friendship quality and rates of growth in social functioning are also displayed in Panel 1, Model 2 of Table 3. Higher average levels of friendship quality were not significantly related to greater gains in social functioning over time. Overall, results suggest that children with higher levels of friendship quality displayed lower levels of internalizing problems and higher levels of social skills. However, children with higher levels of friendship quality did not display lower levels of externalizing problems, nor did they show greater gains in social functioning over time.

***Within-child associations.*** Model 2 in Panel 2 of Table 3 displays the results of the within-child analyses of associations between individual changes in friendship quality and

growth over time in social functioning. There was a significant association between friendship quality and social skills such that increases in a child's friendship quality were associated with increases in social skills across middle childhood ( $\beta = 0.05$ ). The effect size of this association remained the same from Model 1 to Model 2. Thus, the addition of covariates related to friendship quality or social functioning did not reduce the association between friendship quality and social skills. There were no associations between changes in friendship quality and declines in internalizing or externalizing problems over time. These findings suggest that increases in a child's friendship quality are linked with increases in their social skills, but not with decreases in their internalizing or externalizing problems across middle childhood.

Please refer to Table 5 in the Appendix for the coefficients for all covariates in the models.

### **Academic achievement**

***Between-child differences.*** Results of the between-child analyses of associations between average levels of friendship quality and average levels (intercept) and rates of growth (slope) in reading and math grades are displayed in Panel 1, Model 2 of Table 4. There were no significant associations between average levels of friendship quality and average reading or math grades. Between-child associations between average levels of friendship quality and rates of growth in grades are also displayed in Panel 1, Model 2 of Table 4. Average friendship quality was not significantly related to rates of growth in reading or math grades over time. Findings suggest that children with higher levels of friendship quality do not display higher levels or greater gains in grades throughout middle childhood.

***Within-child associations.*** Model 2 in Panel 2 of Table 4 displays the results of the within-child analyses of associations between individual changes in friendship quality and

growth over time in reading and math grades. A child's growth in friendship quality across middle childhood was significantly associated with growth in reading grades ( $\beta = 0.06$ ). In addition, there was a significant association between friendship quality and math grades, indicating that growth in a child's friendship quality was associated with increases in the child's math grades across middle childhood ( $\beta = 0.04$ ). For both reading and math, the effect sizes remained the same from Model 1 to 2, suggesting that the addition of covariates does not explain any of the variability in associations between friendship quality and grades. Overall, these findings suggest that increases in a child's friendship quality are related to increases in their reading and math grades across middle childhood.

Please refer to Table 5 in the Appendix for the coefficients for all covariates in the models.

### **Research Aim 2: The Independent Contribution of Friendship Quality to Children's Functioning above Mother and Teacher Relationship Quality**

As discussed above, hierarchical models allow the relative importance of friendship quality for children's positive functioning to be examined by comparing models that include varying characteristics and relationships. To address the importance of friendship quality over and above children's other important relationships during middle childhood, mother-child and teacher-child relationship quality were added in Model 3. Comparison of Models 2 and 3 reveals the changes in effect sizes and significance in the association between friendship quality and positive functioning once other relationships are accounted for. Two elements were examined to address changes between models: 1) comparison of the effect sizes of each relationship, and 2) percent reduction in the effect size of friendship quality from Model 2 to Model 3. Overall, comparison of the models suggests that associations between friendship quality and social and

academic functioning became weaker as additional relationships were added to the models. Associations that were significant in Model 2 were smaller in Model 3, and some effects were reduced to trend-level or non-significance. The reduction of significance in Model 3 and the strong associations between teacher-child relationship quality and children's functioning in these models suggest that teacher-child relationship quality explains a large portion of the variance in the associations between friendship quality and positive functioning.

### **Social functioning**

*Between-child differences.* Results of the between-child analyses of associations between average levels of friendship quality and average levels (intercept) and rates of growth (slope) in internalizing and externalizing problems and social skills when average levels of mother and teacher relationship quality are included in the model are displayed in Panel 1, Model 3 in Table 3. Higher average levels of friendship quality were associated with lower average levels of internalizing problems ( $\beta = -0.09$ ) when mother and teacher relationship quality were controlled. In this model, higher average levels of teacher-child relationship quality were also associated with lower levels of internalizing problems ( $\beta = -0.28$ ). Comparison of the effect sizes of friendship and teacher relationship quality suggests that teacher relationship quality has three times greater an association with children's internalizing behavior than friendship quality. Although there were no significant associations between average levels of friendship quality and externalizing problems or social skills, there were associations between these outcomes and mother and teacher relationship quality. Higher average levels of teacher-child relationship quality were associated with lower average levels of externalizing problems ( $\beta = -0.54$ ). Also, higher average levels of mother-child and teacher-child relationship quality were associated with higher average levels of social skills ( $\beta = 0.06$  and  $\beta = 0.65$ , respectively), indicating that the

association between teacher-child relationship quality and children's social skills is more than ten times greater than the association between mother-child relationship quality and social skills. There were no significant associations between mother-child relationship quality and internalizing or externalizing problems. There were also no significant associations between average levels of relationship quality for all three relationships and rates of growth in social functioning over time. Overall, findings indicate that children with greater friendship quality display lower levels of internalizing problems when mother and teacher relationship quality are included in the model. Children with greater relationship quality with their teachers also exhibit greater social functioning in all three areas, and children with greater relationship quality with their mother show higher levels of social skills during middle childhood. However, children with greater friendship quality do not display lower levels of externalizing problems or higher levels of social skills, and do not show greater gains in social functioning over time.

Comparisons of the effect sizes of friendship quality between Model 2 and Model 3 indicate that the associations between friendship quality and internalizing problems and social skills in Model 2 become weaker in Model 3. The explanation of internalizing problems by friendship quality is reduced by 10% when mother and teacher relationship quality are added to the model. For social skills, the effect size of friendship quality was reduced to non-significance when mother and teacher relationship quality were included in the model. The association between friendship quality and social skills was reduced by 43%, indicating that the addition of mother-child and teacher-child relationship quality to the model appears to explain a moderate amount of the variability in this association.

***Within-child associations.*** Model 3 in Panel 2 of Table 3 displays the results of the within-child analyses of associations between individual changes in friendship quality and

growth over time in social functioning when changes in mother and teacher relationship quality are accounted. Increases in friendship quality were associated with increases in social skills at trend-level ( $\beta = 0.04$ ). In this model, increases in teacher-child relationship quality were also related to increases in children's social skills ( $\beta = 0.49$ ). Comparison of these effects sizes indicates that the association between teacher relationship quality and social skills is more than 12 times stronger than the association between friendship quality and social skills.

Other results showed that increases in friendship quality were not significantly associated with decreases in internalizing or externalizing problems. However, increases in teacher-child relationship quality were associated with decreases in these problems. Specifically, increases in teacher-child relationship quality were associated with decreases in internalizing problems ( $\beta = -0.33$ ) and externalizing problems ( $\beta = -0.39$ ). Increases in mother-child relationship quality, however, were not related to increases in social functioning across middle childhood. Overall, findings indicate that increases in a child's friendship quality may be associated with increases in their social skills, but not with decreases in their internalizing or externalizing problems. Increases in a child's relationship quality with their teacher, however, are related to increases in their social functioning over time.

Comparison of the effect sizes of friendship quality between Models 2 and 3 reveals that the significant association between growth in friendship quality and growth in social skills was reduced to trend-level when mother-child and teacher-child relationship quality were entered in the model. Specifically, the association was reduced by 25%, indicating that these important relationships with adults explain away a moderate amount of the variance in the association between growth in friendship quality and social skills across middle childhood.



Please refer to Table 5 in the Appendix for the coefficients for all covariates in the models.

### **Academic achievement**

***Between-child differences.*** Results of the between-child analyses of associations between average levels of friendships quality and average levels (intercept) and rates of growth over time (slope) in reading and math grades when average levels of mother and teacher relationship quality are accounted for are displayed in Panel 1, Model 3 in Table 4. Higher average levels of friendship quality were not associated with higher average levels of reading and math grades. Higher average levels of mother-child relationship quality were also not associated with grades, yet higher average levels of teacher-child relationship quality were related to higher average grades. Specifically, higher average levels of teacher-child relationship quality were associated with higher reading grades ( $\beta = 0.15$ ) and higher math grades ( $\beta = 0.17$ ). There were no significant associations between higher average levels of friendship quality, or higher average levels of mother or teacher relationship quality, and greater gains in grades across middle childhood. Results indicate that higher quality friendships were not associated with higher grades, but higher quality teacher relationships were related to higher grades.

***Within-child associations.*** Model 3 in Panel 2 of Table 4 displays the results of the within-child analyses of associations between individual changes in friendship quality and growth over time in grades when changes in mother and teacher relationship quality are accounted. Increases in children's friendship quality were related to increases in reading grades ( $\beta = 0.06$ ), and increases in friendship quality were related to trend-level increases in math grades ( $\beta = 0.03$ ) across middle childhood. Increases in teacher-child relationship quality were also related to increases in reading grades ( $\beta = 0.08$ ) and math grades ( $\beta = 0.08$ ) across middle

childhood. Comparisons of the effect sizes of these relationships indicate that teacher relationship quality was slightly stronger than friendship quality in predicting growth in reading grades, but the association between teacher relationship quality and math grades is almost three times stronger than the association between friendship quality and math grades. There were no significant associations between mother relationship quality and reading or math grades. Findings suggest that increases in a child's relationship quality with both their close friend and their teacher are associated with increases in their reading and math grades during middle childhood.

Comparisons of effect sizes of friendship quality across Models 2 and 3 suggest that incorporating mother-child and teacher-child relationship quality does not weaken the associations between friendship quality and reading grades, but does reduce the association between friendship quality and math grades. The association between friendship quality and reading grades was not reduced between Models 2 and 3, indicating that adding mother and teacher relationship quality to the model does not diminish the association between friendship quality and reading grades. The association between friendship quality and math grades was reduced by 25% between Models 2 and 3, indicating that the association between friendship quality and math grades is moderately reduced when mother and teacher relationship quality are included in the model.

Please refer to Table 5 in the Appendix for the coefficients for all covariates in the models.

### **Research Aim 3: Multiplicative Effects of Friendship Quality and Mother and Teacher Relationship Quality**

Interaction terms between repeated measures of friendship quality and repeated measures of mother-child relationship quality, and between repeated measures of friendship quality and repeated measures of teacher-child relationship quality, were added to the final models (Model 3) at Level 1. Also, interaction terms between average levels of friendship quality and average levels of mother-child relationship quality, and between average levels of friendship quality and average levels of teacher-child relationship quality, were added to the final models (Model 3) at Level 2. Coefficients for all covariates in the models are displayed in Table 6 in the Appendix. None of the interaction terms for average levels or slopes were significant, indicating that there was no multiplicative effect of friendship quality to mother or teacher relationship quality throughout middle childhood. This was the case for both individual children's growth trajectories of relationship quality and between-child average levels and rates of growth in relationship quality during middle childhood. Findings indicate that higher levels of friendship quality are not more supportive for positive social and academic functioning for children with higher levels of mother or teacher relationship quality, and that growth in friendship quality is not more supportive for a child who also experiences growth in mother or teacher relationship quality during middle childhood.

### **Research Aim 4: The Importance of Friendship Quality Across Middle Childhood**

An interaction term between age and repeated measures of friendship quality was added to the final models (Model 3) at Level 1 to test whether friendship quality becomes more important for supporting social and academic functioning as children progress toward adolescence. Coefficients for all covariates in the models are displayed in Table 7 in the

Appendix. There was a significant, positive coefficient for math, suggesting that friendship quality becomes more important for math grades as children progress through middle childhood ( $B = .01$ ). Specifically, friendship quality becomes more strongly supportive of math grades as children get older. The remaining interaction terms were not significant, indicating that the importance of friendship quality for externalizing and internalizing problems, social skills, and reading remained the same throughout middle childhood.

### **Research Aim 5: Friendship Quality and Proximity Throughout the School Day**

The first part of Aim 5, examining whether classroom-based friendships are associated with more positive functioning than friendships that are not classroom- or school-based is displayed in Panel 1 in Table 5 in the Appendix. Proximity during the school day appears to be supportive of math and reading grades. Children who spent less time in proximity to their friend in the classroom (i.e., children who had a friend who shared their school but not their classroom for a greater proportion of time during middle childhood) displayed lower math grades than children who shared the same classroom as their close friend for a greater proportion of time ( $\beta = -0.08$ ). Also, children who spent less time in proximity to their friend during the school day (i.e., children who had a friend who attended a different school for a greater proportion of time during middle childhood) showed greater rates of growth in reading grades than children who shared the same classroom as their close friend for a greater proportion of time ( $\beta = 0.003$ ). This finding is qualified by the very small effect size, suggesting that this may be a spurious finding. There were no other significant differences in associations between average levels of friendship quality and average levels or rates of growth in social and academic functioning for children who shared a classroom with their friend and children who shared a school or did not attend the same school as their close friend during middle childhood. Findings suggest that sharing a classroom with a

close friend is related to greater math achievement, but that children may experience greater gains in reading if they do not attend the same school as their close friend.

The second part of Aim 5, investigating whether friendship quality moderates associations between proximity to a close friend during the school day and positive functioning, was investigated by adding interaction terms between average levels of friendship quality and average amount of time during middle childhood the child spent in proximity to his or her friend at school to the final models (Model 3) at Level 2. Coefficients for all covariates in the models are displayed in Table 8 in the Appendix. There were no significant interaction terms for average levels or slopes of social and academic functioning, indicating that the importance of friendship quality for children's functioning remains stable regardless of whether or not children attend the same classroom or school as their close friend.

#### **Research Aim 6: Friendship Quality as a Protective Factor for Low Engagement**

An interaction term between average levels of friendship quality during middle childhood and children's engagement was added to the final models (Model 3) at Level 2 to investigate whether friendship quality is more important in aiding positive development for children with lower levels of engagement. Coefficients for all covariates in the models are displayed in Table 9 in the Appendix. Preliminary analyses revealed significant main effects of the intercept of engagement for social skills and reading and math grades, such that higher levels of engagement were associated with higher levels of these outcomes (results not shown). However, there were no significant interaction terms for average levels or slopes, indicating that children with lower levels of engagement do not receive greater support for positive functioning from higher-quality friendships than from lower-quality friendships during middle childhood.

## **4.0 DISCUSSION**

The goal of the present study was to investigate longitudinal associations between friendship quality and social and academic functioning, making between-child comparisons and examining within-child changes to advance our understanding of the unique support that friendships provide for children's positive functioning during middle childhood. Results suggested that children with higher levels of friendship quality display fewer internalizing problems during middle childhood, and that growth in a child's friendship quality is associated with growth in their reading and math grades and social skills throughout middle childhood. The importance of friendship quality for supporting children's math grades grows throughout middle childhood, but remains unchanging for other indicators of children's positive functioning. Finally, sharing a classroom with a close friend appears to be particularly supportive for children's math grades, but friendships are supportive regardless of whether children share a classroom with their friend for social functioning and reading grades.

This study extends previous research by indicating that friendship quality is developmentally supportive for children's social functioning and academic achievement during the middle childhood years, earlier in development than has been generally assumed. This study also advances previous work on friendships in illustrating that friendship quality uniquely contributes to positive functioning above the relationship quality children have with their mother

and teachers, and that the importance of friendship quality for positive functioning generally remains unchanging as children progress through middle childhood. Overall, friendship quality supported children's positive functioning regardless of whether or not children shared a classroom or school with their close friend, and was equally supportive for children with varying levels of engagement. These findings illustrate that the care, emotional support, guidance, and help that children receive within high-quality friendships independently contribute to children's social and academic development throughout middle childhood.

The examination of between-child comparisons and within-child changes provided some useful insights into the nature of these associations. Between-child comparisons provided information on whether average friendship quality throughout four grade levels during middle childhood was associated with average functioning during this time. A host of covariates were included to control for selection bias and account for factors that may be associated with friendship quality and social and academic functioning, thereby reducing the possibility of spurious findings and increasing our confidence in connections found between greater friendship quality and more positive functioning. Additionally, associations that remained significant in the presence of multiple selection covariates and mother and teacher relationship quality provide robust results. This decreases the likelihood that a third variable, such as high social ability, is responsible for associations between friendship quality and positive functioning. Within-child analyses also offer a rigorous analysis by examining whether a child who grows in friendship quality also grows in social and academic functioning over time. This suggests causal relationships between friendship quality and positive functioning and thus provides greater confidence in results. It is possible that results in the present study are biased by reciprocal causation (e.g., grades influence and are influenced by friendship quality) or omitted variables

that vary over time (e.g., a tumultuous family event). However, inclusion of important time-varying variables that likely affect associations between friendship quality and social and academic functioning (e.g., family income, mother-child relationship quality) reduces the risk of biased results. Thus, findings that indicate that changes in friendship quality are linked with changes in functioning lend themselves to causal inference. That is, we can assume that increases in a child's friendship quality will lead to increases in their social and academic functioning. Efforts can thus be made at targeting friendship quality as a point of leverage in supporting children's positive social functioning and grades during middle childhood.

#### **4.1.1 Friendship quality and social and academic functioning during middle childhood**

*Internalizing and externalizing problems.* Between-child analyses indicated that greater levels of friendship quality were associated with lower levels of internalizing problems during middle childhood. This association remained even in the presence of a host of child background and personality variables that may confound associations between friendship quality and social functioning. Although adding these control variables reduced the association slightly (9%), the association remained significant, indicating that there was a relationship between higher levels of friendship quality and lower levels of internalizing problems that was not explained by children's demographic background or personality characteristics. When mother and teacher relationship quality were added to the model, the association between higher levels of friendship quality and lower levels of internalizing problems was reduced by another 10%. However, this association remained significant, suggesting that friendship quality uniquely contributes to lower levels of internalizing problems during middle childhood even when children's relationships with their



mother and teachers were considered. The association between friendship quality and fewer internalizing problems aligns with previous work with older children and adolescents that indicated that higher levels of friendship quality are associated with fewer internalizing problems (Waldrip, Malcolm, & Jensen-Campbell, 2008). The current study extends this work by showing that this association is present earlier in middle childhood and extends across four different grade levels. Emotional and instrumental support from high-quality friendship, such as high esteem from knowing he or she is cared about or guidance in figuring out problems, thus seems to support fewer internalizing problems for children. Although the present study presents a rigorous analysis of this association, there may still be some characteristic of children (such as sociability) that makes them both more likely to have both high quality friendships and fewer internalizing problems. Relationship quality entails many aspects of positive social functioning, such as behavioral regulation and positive affect, that may make children who are successful in one domain also successful in the other. However, by accounting for a host of covariates and controlling for omitted variable bias, there is reduced risk of bias in the finding that children with greater friendship quality display fewer internalizing problems during middle childhood.

There were, however, no within-child associations between increases in friendship quality and decreases in internalizing problems throughout middle childhood. This lack of within-child finding indicates that a child who develops greater friendship quality from third to sixth grades will likely not see corresponding reductions in his or her internalizing problems. Thus, the between-child findings should be interpreted cautiously. Selection may still be operating, as there may be another factor that explains why children who perceive supportive friendships also tend to display fewer internalizing problems. For example, children who perceive the world as a positive place or who have high levels of sociability may both report that

they have high quality friendships and exhibit fewer withdrawn and anxious behaviors. Thus, the finding that greater levels of friendship quality are related to lower levels of internalizing problems may be descriptively useful in differentiating children's friendships and behaviors, but does not indicate a causal relationship between growth in friendship quality and reductions in internalizing behaviors.

No between- or within-child associations between friendship quality and externalizing problems were found in the present study. This lack of association could be due to several reasons. First, friendship quality may not be related to externalizing problems for children in middle childhood. Waldrup, Malcolm, and Jensen-Campbell (2008) found that friendship quality was associated with fewer externalizing problems for students in fifth to eighth grades, and thus friendship quality may not affect externalizing problems until children near adolescence. This may be because behaviors considered to be externalizing problems likely change as children develop. While disruptive classroom behavior and aggression may be considered by teachers to be externalizing problems earlier in elementary school, behaviors such as smoking, truancy, risk-taking, and attitudes towards school may be more common indicators of externalizing problems during adolescence. These behaviors may be considered by teachers to be much more problematic than a small disruption of the class by a younger child, and may be more likely to be influenced by friends as adolescents gain independence. Thus externalizing problems may be rated more harshly by teachers or be more related to friendship quality later in development, but not earlier on in elementary school. It is also possible that externalizing problems reflect a personality trait that does not change over time. In an analysis of children's individual growth trajectories in behavior problems from six to 13 years old, Kowaleski-Jones and Duncan showed that children's behavior problem trajectories remained flat during middle childhood (1999).

Thus, friendship quality may not affect any small changes that may occur in externalizing problems throughout middle childhood.

***Social skills.*** Both between- and within-child analyses showed that friendship quality was associated with social skills, but these findings were attenuated when mother and teacher relationship quality were added to the models. Between-child analyses revealed that children with greater levels of friendship quality displayed greater levels of social skills. This finding was somewhat explained by selection, as the effect size was reduced by 30% when covariates were incorporated into the model. That is, the association between higher levels of friendship quality and higher levels of social skills was somewhat explained by children's background and personality factors. However, this association remained significant, indicating that friendship quality explains some of the variance in children's social skills. This finding aligns with another study that found that older children and adolescents with greater friendship quality displayed more social skills (Waldrip, Malcolm, & Jensen-Campbell, 2008). Yet, in the present study, when mother and teacher relationship quality were added to the model, this association was reduced to non-significance. The addition of mother and teacher relationship quality reduced the association between higher levels of friendship quality and higher levels of social skills by 43%, thereby explaining much of this association. Thus, greater levels of friendship quality do not independently contribute to greater social skills when important relationships with adults are considered.

The reduction of the association between higher levels of friendship quality and social skills to non-significance when mother and teacher relationship quality were added to the model may be explained by several factors. First, children's relationships with their mother and teachers may be of primary importance in distinguishing social skills between children. Children in

middle childhood may particularly need support from adults for positive social skills. At this age, children are still learning social norms and how to interact with others in positive, cooperative ways (Huston & Ripke, 2006), and may need scaffolding from a supportive adult in showing them positive social behaviors. Thus, children's relationship quality with their mother and teachers may be more supportive than their friendships in promoting greater levels of social skills during this time. Additionally, teachers reported both their relationship quality with children and children's social skills, and the shared variance of these teacher ratings may diminish the strength of children's reports of their friendship quality to predict teacher's reports of social skills.

Within-child analyses also demonstrated that friendship quality was associated with social skills, but the association was lessened when relationship quality with mothers and teachers were added to the model. Specifically, increases in friendship quality were related to increases in social skills across third to sixth grades. The addition of covariates that may confound associations between friendship quality and social skills did not reduce the association, suggesting a strong association between increases in friendship quality and increases in social skills that is not explained by other child or family factors. However, when mother and teacher relationship quality were added to the model, the association was reduced to trend-level. Mother and teacher relationship quality appear to explain away 25% of the association between friendship quality and social skills. These findings suggest that children who grow in friendship quality during middle childhood will likely also grow in social skills, but that when relationship quality with mothers and teachers during this time are considered, friendship quality may not contribute as strongly to children's social skills.

Associations between friendship quality and social skills are perhaps more complicated than associations between friendship quality and other indicators of children's positive functioning. Friendship quality involves many aspects of social skills, such as cooperation, help, and perspective-taking, and there may be a more complex association between these closely aligned constructs. Although the present study suggests that increases in friendship quality may produce growth in social skills, it is possible that increases in social skills lead to increases in friendship quality, which may in turn promote greater social skills. Research on interventions that teach social skills to children suggests that increasing social skills may contribute to better quality friendships (DeRosier & Marcus, 2005; Oden & Asher, 1977). However, research on friendship interventions and their effectiveness is limited, and interventions are generally designed for socially rejected or aggressive children (Bagwell & Schmidt, 2011b). More research is needed to disentangle the associations between friendship quality and social skills and the processes by which they may influence one another.

***Reading and math grades.*** The present study found that higher levels of friendship quality were unrelated to higher reading and math grades. Although previous cross-sectional studies have indicated that friendship quality is positively related to grades (Berndt & Keefe, 1995; Levy-Tossman, Kaplan, & Assor, 2007), the findings of the present study align with past longitudinal research indicating that friendship quality does not predict grades (Berndt, Hawkins, & Jiao, 1999). Thus, higher levels of friendship quality may be contemporaneously associated with higher grades, but not over time. Research on other indicators of positive academic functioning, however, have suggested that friendship quality is related to greater school involvement and adjustment across time (Berndt & Keefe, 1995; Berndt, Hawkins, and Jiao, 1999). Thus, friendship quality may contribute to positive academic behaviors, but these

behaviors may not translate into children's improved reading and math grades. Additionally, associations between friendship quality and positive academic functioning may not develop until later in middle school. The studies by Berndt and Keefe (1995) and Levy-Tossman, Kaplan, and Assor (2007) examined seventh and eighth grade students, and associations between greater levels of friendship quality and higher reading and math grades may become stronger as children develop.

However, within-child analyses in the present study revealed that changes in friendship quality are associated with changes in reading and math grades from third to sixth grades. Specifically, increases in friendship quality were related to increases in reading and math grades over time. The emotional and instrumental support that children receive from friendships, such as emotional security to more fully explore their classroom or help in understanding new concepts, thus seems to promote their growth in academic grades. The addition of selection covariates did not reduce these associations, suggesting that there is a consistent association between friendship quality and grades that is not explained by child background characteristics or aspects of a child's personality. Adding mother and teacher relationship quality to the model also did not reduce the association between friendship quality and reading grades, suggesting that there is an association between friendship quality and reading grades that is not explained by relationship quality with adults. However, the addition of mother and teacher relationship quality to the model reduced the association between friendship quality and math grades to trend, and these relationships with adults explain a modest amount (25%) of the variation in children's math scores. Thus, friendship quality may not independently contribute to children's math grades when their relationships with their mother and teachers are considered, or the contribution of

friendship quality to math grades is quite small compared to the contribution of other important relationships during middle childhood.

These findings indicate that increases in friendship quality are associated with increases in reading and math grades, and suggest that improving a child's friendship quality with a close friend will also improve his or her reading grades, and may improve his or her math grades. This finding is noteworthy because between-child analyses were not significant and suggested that generally high levels of friendship quality throughout middle childhood do not appear to be associated with higher grades. Examining within-child changes in friendship quality over time, however, suggests that for individual children, grades increase as friendship quality increases across middle childhood. The importance of within-child analyses for children's grades is illustrated further by the unconditional model which showed that, for the overall sample, math grades declined across middle childhood. However, once individual changes in friendship quality were examined, analyses indicated that math grades increased for children who saw increases in their friendship quality. These findings elucidate the need for within-child analyses to disentangle associations between children's friendship quality and positive functioning, and future research should pursue within-child analyses to better investigate such associations.

#### **4.1.2 Analytic issues in associations between friendship quality and social and academic functioning**

The present study extended extant research by examining friendship quality simultaneously with mother and teacher relationship quality. This ecologically-based analysis yielded small effect

sizes, as well strong associations between teacher-child relationship quality and children's positive functioning. These issues are discussed below.

*Effect sizes.* In the present study, standardized effect sizes for associations between friendship quality and social and academic functioning ranged from 0.03 to 0.10 across Models 2 and 3. These effect sizes are relatively small, possibly suggesting that friendship quality is not developmentally meaningful for children's positive functioning. However, associations between friendship quality and social and academic functioning across four different grade levels were found after controlling for a multitude of child, family, and teacher covariates that may confound associations between friendship quality and positive functioning. Standardized effect sizes ranged from 0.04 to 0.11 in Model 1, suggesting that the inclusion of additional covariates explained some of the variation in associations between friendship quality and social and academic functioning. Some findings remained significant even when children's relationships with their mother and teachers were included in the model. Also, within-child analyses indicated that increases in friendship quality were associated with increases in reading grades (and math and social skills at trend-level) over time, which suggests a causal relationship. Thus, although it yielded small effect sizes, friendship quality appears to uniquely contribute to children's positive functioning during middle childhood and thereby is an important developmental context for children. These small yet consistent effects may increase as children progress through adolescence, as cross-sectional studies have shown that friendship quality grows between middle childhood and adolescence (Berndt, 2002; Buhrmester, 1998). Building positive working models of friendships and developing supportive relationships during middle childhood may contribute to greater friendship quality in adolescence, when friendships become particularly important as adolescents gain autonomy, individuate from their family, and further develop their identity



(Bagwell & Schmidt, 2011a). Investing in friendship quality in middle childhood thus could be important for setting the stage for high-quality friendships during adolescence, when the effects of friendship on children's positive functioning may become greater.

***Mother and teacher relationship quality.*** Several issues related to mother and teacher relationship quality should be addressed. In this investigation, teacher-child relationship quality was the strongest predictor of children's social and academic functioning, and effect sizes were much larger than those for friendship and mother-child relationship quality. This finding may suggest that teacher-child relationship quality is highly important for children's positive behavior and achievement in the context of the classroom. The support provided by high teacher relationship quality may not extend to other contexts, such as the home environment, on which mothers are more likely to base their reports of their child's behavior, which may explain the lack of associations between mother-child relationship quality and functioning in this study. Mother-rated assessments of their child's functioning may show different patterns of findings and reveal a stronger association between mother relationship quality and positive functioning than was indicated in this analysis. The strength of teacher relationship quality also appears to have soaked up a lot of the variance in the association between friendship quality and positive functioning, possibly making friendship quality appear to be a less important predictor of children's functioning than it actually is. This appears to be the case particularly for social skills, as the between- and within-child associations between friendship quality and social skills were significant before teacher-child relationship quality was added to the model, but were reduced to trend- or non-significance once teacher relationship quality was included. Thus, not accounting for teacher relationship quality may confound associations between friendship quality and

positive functioning, and future studies should consider this important relationship, particularly when teacher-rated outcomes measures are used.

Although the findings in the present study suggest that teacher relationship quality is more strongly related to children's social and academic functioning than friendship or mother relationship quality, this association may be biased by intra-rater report. Teachers reported both their relationship quality with the study child and the study child's problem behaviors, social skills, and grades, and the reliance on teacher reports for both predictor and outcome variables may suggest a stronger association than what actually exists. Previous studies have also shown that teachers' reports of their relationship quality with students are highly associated with their reports of children's functioning. For example, one study examining associations between teacher-child relationship quality and children's social and academic functioning found that teachers' reports of their relationship quality with students predicted teachers' reports of students' literacy and math skills, but did not predict standardized measures of literacy and math (Maldonado-Carreño & Votruba-Drzal, 2011). This study also found that teachers' reports of their relationship quality predicted both teachers' and mothers' reports of children's problem behavior, but the effect sizes for teachers' reports were much larger than those in mothers' reports. Thus, there appears to be some bias in teachers' reports of children's behaviors based on teachers' perceptions of the closeness and conflict in their relationship with their students.

The risk for bias, however, is somewhat reduced in the present study by examining children across four grade levels. Different teachers completed measures each year, and thus the present study did not rely on just one teacher's perceptions of their relationship quality with the child and the child's functioning during one school year, as has been the case in previous work (e.g., Berndt, Hawkins, & Jiao, 1999; Waldrip, Malcolm, & Jensen-Campbell, 2008). The

findings of the present study indicated that children who were rated, on average, higher in teacher-child relationship quality displayed, on average, lower internalizing problems, as rated by four different teachers across middle childhood. This study also found that children who were rated increasingly higher in teacher-child relationship quality were also rated increasingly higher in math and reading grades and social skills by their teachers during middle childhood. Thus, although the present study may be biased by teachers' reports of both relationship quality and social and academic functioning, this bias is reduced by the inclusion of four different teachers' reports on children throughout middle childhood.

The strong associations between teachers' reports of their relationship quality with children and teachers' reports of children's functioning in the classroom have implications for future research. Attention should be paid to the rater of the predictor and outcome variables used in a study, as use of the same rater for multiple reports may bias findings. In addition, the present study highlights the fact that teachers' perceptions of their relationship quality with students are entwined with teachers' perceptions of their students' behavior and achievement. Thus, it may benefit studies using teacher-rated outcomes to include teacher-child relationship quality as a control for these outcomes, even if relationship quality is not a central research question.

#### **4.1.3 Variations in friendship quality during middle childhood**

The present study examined whether associations between friendship quality and social and academic functioning might vary for particular children. Overall, there were very few significant main effects or moderators, indicating that the importance of friendship quality for children's positive functioning seems unmitigated by other factors that might influence this association.

***Multiplicative effects of friendship quality and mother and teacher relationship quality.***

Analyses examined whether there might be multiplicative effects such that friendship quality heightens high-quality mother and teacher relationships and results in greater social and academic functioning. Results revealed that greater friendship quality does not enhance high relationship quality with mothers and teachers. Findings in the present study indicate that relationships with friends and teachers are independently important for children's social and academic functioning in the classroom, and both should be promoted as avenues to support children's development across middle childhood. The strong effect sizes of teacher relationship quality likely overpowered any possible enhancement that friendship quality may have offered to social and academic functioning.

Other studies have also shown that teacher relationship quality more strongly predicts children's school functioning than friendship quality. In a study of teacher and peer support of sixth to eight grade students' academic and social motivation, students' perceptions of the emotional support and help they received from their teachers were related to their interest in school and prosocial goals but perceptions of peer support in these dimensions were not associated with motivation (Wentzel, Battle, Russell, & Looney, 2010). This study suggests that even when children were the raters of both teacher and peer relationship quality, children's perceptions of the support they received from teachers was more related to their motivation than support from peers. Social support from teachers was also a stronger predictor of children's school engagement than support from peers or parents in students followed from seventh to eleventh grades (Wang & Eccles, 2012). Thus, although the findings of the present study may be somewhat biased by the use of teachers' reports of both their relationship quality with the study child and the child's social and academic outcomes, these studies suggest that teacher-child

relationship quality is particularly important for children's interest in and valuing of school. However, differences between the present study and the studies discussed here in child age, outcomes, and relationships examined (friends vs. peers) leaves the question of which relationship is most strongly associated with positive child functioning during middle childhood unclear and remains an important avenue for continued research.

Friendship quality also did not fortify high quality relationships with mothers to produce greater social or academic functioning. As discussed above, the mother-child relationship quality measure may have been too weak in the present study to compete with the other measures of relationship quality in predicting teacher-reported behavior and grades. Alternatively, children's friendship quality may not enhance their relationship quality with their mother in predicting their behavior and achievement in the classroom context.

These findings do not support a model whereby children's positive social and academic functioning is compounded by high-quality friendship adding to the support provided by high-quality mother or teacher relationships. However, findings of the independent contribution of friendship quality and teacher relationship quality indicate that both of these relationships are important for children's social and academic functioning during middle childhood. Each relationship may provide children with different facets of emotional and instrumental support. For example, the present study indicated that increases in both friendship and teacher relationship quality were associated with increases in grades throughout middle childhood. A close relationship with their teacher may provide children with instruction that is sensitive to their abilities and needs, while a close friendship may provide children with feelings of security to ask a question and self-esteem to put in effort until they succeed. Some work has begun examining various dimensions of support that different relationships may provide to children.

For example, Wentzel and colleagues examined four aspects of support that peers and teachers may provide to children, including emotional support, emotional safety, help, and expectations for positive social behavior (Wentzel, Battle, Russell, & Looney, 2010). Their findings indicate that peers and teachers may provide different aspects of support to middle school students' school motivation. Further research is needed to investigate the specific aspects of support that friends and teachers provide for children's positive functioning throughout middle childhood.

*Age.* Results showed that friendship quality remained equally important for most indicators of positive functioning across the middle childhood years. Although previous cross-sectional research has shown that friendship quality is greater in adolescence than in middle childhood (Berndt, 2002; Buhrmester, 1998), the present study indicated that associations between friendship quality and positive functioning across third through sixth grades remain the same. This finding suggests that friendship quality is just as supportive in third grade as it is in sixth grade, and that supporting close friendships throughout middle childhood could be beneficial for children's positive development.

The exception to this was for math grades, as friendship quality became increasingly important in predicting math grades as children progressed through middle childhood. This finding may be due to the fact that math curriculum becomes increasingly challenging as children progress through elementary school (Dunifon & Kowaleski-Jones, 2002; Eccles, 1999; Pianta, Belsky, Houts, & Morrison; 2007). A supportive friend during this time may increase children's persistence and engagement in challenging math curriculum, or offer help in understanding increasingly difficult math concepts. Results indicating positive associations between friendship quality and math lend support to friend-based math interventions. Some math curricula that includes peer coaching or tutoring, such as PALS (Peer Assisted Learning

Strategies) and ClassWide Peer Tutoring, have been shown to promote children's math understanding (Fuchs, Fuchs, Phillips, Hamlett, & Karns, 1995; Greenwood, Delquadri, & Hall, 1989). However, these programs generally assign less-skilled children with their more-skilled peers, and more research is needed to understand how friends and teacher-assigned pairs may provide different levels and types of support for math growth. These peer-based coaching programs might show greater effectiveness if they capitalize on the emotional and instrumental support provided by close friendships and pair children with their friends instead of their more-skilled classmates. Although close friendships support children's math skills throughout middle childhood, findings suggest that targeting older children (perhaps fifth and sixth grade students) may be the best point of leverage if an intervention cannot be implemented in all grades.

This study also builds on existing literature by showing that the contribution of friendships to older children and adolescents' social and academic functioning suggested by previous work extends to earlier ages. Future work on friendships and children's well-being should not be limited to adolescents, as results indicate that friendship quality aids the positive functioning of children in middle childhood and remains equally supportive throughout these years. However, research has yet to follow children from middle childhood through adolescence to examine whether the links between friendship quality and social functioning and academic achievement become stronger as children develop. Associations between friendship quality and math grades may be of particular interest, as this association may become even stronger as children age. Longitudinal work across developmental periods is an important next step in friendship research, and the findings of the present study indicate that examining both between-child comparisons and within-child trajectories of friendship quality over time is needed to build up the evidence base of the developmentally-supportive nature of friendships.

***Proximity.*** In addition to being a unique support for children's functioning during middle childhood, friendship quality remains important regardless of proximity to the friend throughout the school day. This finding has theoretical and meaningful implications for friendships. Namely, it is important for children to have support from a close, intimate friend, regardless of the context in which they interact with that friend. Further, this finding is bolstered by the use of both child and teacher reports. Children's perceptions of their friendship quality, including friendship quality with an out-of-school friend for some children, were associated with teachers' reports of children's behavior and achievement in the classroom across multiple grade levels. The findings of the present study, that greater levels of friendship quality are related to fewer internalizing problems and that increases in friendship quality are related to increases in grades and social skills, thus do not hinge on children sharing a classroom with their close friend. Friendship quality remains a supportive context of development whether or not children share the classroom or school context with their friend. It thus seems that children derive esteem from knowing that they have a supportive relationship with an agemate, regardless of when and where they are able to receive that support (Sullivan, 1953). This finding also aligns with attachment theory in the sense that children carry a cognitive representation of their friendship across time and distance and that children's psychological bond with their close friend may be more strongly related to their functioning than physical closeness (Bowlby, 1980; Bretherton, 1985). Children in middle childhood may be able to draw care, concern, and emotional support from their close friendship that supports their functioning in the classroom, even if they do not share proximity with their friend in the classroom throughout the school day.

The present study, however, revealed that friendship quality predicts improvements in math grades when children share a classroom with their friend, but that children grow faster in



reading when their friend attends a different school. Associations between friendship quality and increasing math grades when children are in the same classroom as their friend may indicate that sharing a classroom with a close friend provides children with instrumental help in understanding complex math ideas or emotional support to keep working at difficult assignments throughout the school day. This finding may further inform friendship-based math interventions discussed above and provide support for educators seeking to improve students' math grades by using classroom-based friendships to their advantage. The effect size of the reading finding was very small and findings seem counterintuitive. Although it is difficult to explain this result, the association between faster rates of growth in reading for children who have their close friend outside of school may suggest that children are exposed to a wider variety of books or vocabulary when their friend attends a different school. It might also be possible that children who do not share a classroom or school with their close friend have lower reading grades to begin with and thus grow at a faster rate to catch up with their peers. Replication and further study is needed to better understand these findings.

The few differences in associations between friendship quality and social and academic functioning based on proximity during the school day in the present study suggest that the associations found in previous studies are likely not the result of children merely sharing a classroom with their close friend. Yet, the present study revealed that a sizeable minority (26%) of children has a close friend outside their school most of the time throughout middle childhood and thus these relationships deserve attention. Findings suggest that support from out-of-school friends is not lessened even though these friends are not available to support children throughout the school day. The closeness, help, and guidance that friendships provide to children cross contexts, and it is important for children to know that they have a close friend who supports

them, even if the friend cannot provide support during the school day. Thus, it seems that the care and concern that children receive from their friend when they do have contact with them is the important factor for their positive functioning in the classroom. Friendships in all contexts should be promoted as a means by which children may receive support for positive functioning during middle childhood.

The findings of the present study that suggest that sharing a classroom with their friend is associated with children's higher math grades aligns with the study by Witkow & Fuligni (2010), which found that number of in-school friends was associated with adolescents' GPAs. In their paper, Witkow and Fuligni (2010) called for studies to investigate children at younger ages to determine when the association between in-school friendships and grades develops, and results presented here indicate that the association appears to be present already at third grade. However, results in the present study suggesting that classroom-based and non-classroom-based friendships do not differ in their support of children's positive social functioning contradicts other studies that have shown that school-based friendships were more supportive for children's social functioning than out-of school friendships (East & Rook, 1992; Van Aken & Asendorpf, 1997). The students in both of these studies were in the sixth grade, and differences in these findings and those of the present study may be explained by the age of students. Children may develop greater needs for physical proximity to their friend as they encounter the stresses of adjustment to middle school; children may need their close friend with them throughout the school day to successfully navigate a new school, greater academic expectations, and more distant relationships with their teachers (Juvonen, Le, Kaganoff, Augustine, & Constant, 2004). Findings may also be explained by differences in study design. The studies by East and Rook (1992) and Van Aken and Asendorpf (1997) were cross-sectional and there may be

contemporaneous associations between classroom-based friendships and greater social functioning. The longitudinal analyses conducted in the present study suggest, however, that sharing a classroom or school with a close friend across several school years is not associated with greater social functioning in middle childhood.

***Engagement.*** The present study examined a child characteristic, engagement, which may make friendship quality particularly important for some children's social and academic functioning. Previous research has suggested that children with lower levels of engagement may particularly benefit from the support offered by a high quality friendship (Azmitia & Montgomery, 1993; Newcomb & Bagwell, 1995). No moderation effects were detected, indicating that friendship quality is not more supportive of social or academic functioning for children with lower levels of engagement. The emotional support, help, and cooperation that friendships provide likely support positive engagement for all children, so that children's engagement and persistence improves regardless of their initial levels. Although the present study found no interaction effects for engagement, child characteristics other than gender and age have generally not been explored in existing friendship quality literature and warrant further research. Other traits or characteristics such as behavioral regulation or grades may make friendships particularly important for children with low levels of these characteristics, and further investigation would help inform practitioners about which children may especially benefit from developing a close friendship.

## 4.2 IMPLICATIONS

The effect sizes detected in the present study for associations between friendship quality and social and academic functioning were small. However, findings were robust through rigorous analyses and suggest that friendship quality is associated, to some extent, with positive functioning throughout middle childhood. Interventions may be meaningful, then, if they promote children's friendship quality during middle childhood. Interventions that help children form and maintain positive friendships could be added as a component to already-existing interventions aimed at mother and teacher relationships, thereby providing a more comprehensive and perhaps more successful approach to promoting positive development. Additionally, because friendships seem to be more strongly associated with positive functioning in adolescence (Berndt, 2002; Buhrmester, 1998), promoting positive friendship models during middle childhood may set the stage for high-quality friendships in adolescence. Teaching children effective approaches to providing and deriving emotional and instrumental support within friendships during middle childhood may allow children to accumulate these capacities before they reach adolescence, which may pay off during their adolescent years when friends may have a larger impact on behavior and achievement in the classroom.

The findings of the present study are relevant for schools, which have become increasingly focused on the academic performance of children and expect students to find their friends after school (Osterman, 2000; Waters, Cross, & Runions, 2009). This is particularly true with the advent of No Child Left Behind, as schools are focused on increasing test scores at the expense of facilitating supportive relationships (Stipek, 2006). However, the findings of the present study suggest that schools should be interested in supporting close relationships among

students to promote academic achievement and positive classroom behavior. Several programs and interventions have been developed in attempts to curtail the single-minded approach to raise test scores. Two main programs include the *Responsive Classroom*® approach and the Child Development Project (Battistich, Solomon, Watson, & Schaps, 1997). The intent of these programs is to create a sense of belonging and community within the classroom and school, and they have shown promise for improving students' social skills, attitudes toward school, problem solving skills, and academic performance (Battistich, Solomon, Watson, & Schaps, 1997; Brock, Nishida, Chiong, Grimm, & Rimm-Kaufman, 2008). These programs, however, have focused primarily on teachers, training teachers to be sensitive to the needs of their students and take a positive, warm, child-focused approach to instruction and discipline. Yet friendships are an important context in which children learn social norms and skills necessary for their positive behavior in the classroom and academic success (Rubin, Oh, Menzer, & Ellison, 2011). Supporting the development of high quality friendships thus seems an important and salient opportunity by which to promote children's positive social and academic functioning during middle childhood. Although teachers may be the most efficient point of leverage within the classroom, the importance of close, supportive friendships indicated in the present study suggests that programs targeting the relationships of the students in the class may be an integral part of boosting children's behavior and achievement in the classroom.

Interventions and programs targeting relationships among classmates may be most successful if they address the provisions of friendships to children's positive functioning and not friendships per se. By definition, friendships are voluntary and spontaneous (Bagwell & Schmidt, 2011a), and thus teachers cannot assign pairs of friends within the classroom. Teachers can, however, foster a community of learning within the classroom that respects and supports

each member. The positive, sensitive approach encouraged by *Responsive Classroom*® and the Child Development Project for interactions between teachers and their students can be extended to students' relationships with their classmates. Students may learn from their teacher, through instruction and modeling, practices that support their fellow classmates, such as cooperation, mutual respect, listening to and extending others' ideas, providing feedback that is responsive to another child's needs and abilities, and validating the contributions of other children. Children in this kind of classroom context will likely feel supported by their classmates and be more willing to engage and persist in challenging tasks, feel comfortable and secure in their abilities and contribution to the classroom, and develop self-esteem from feeling heard and respected for their ideas. Thus, building a "friend-like" environment within the classroom may provide many of the elements of emotional and instructional support that children find in high-quality friendships that promote their social functioning and academic achievement.

The examples discussed here are based in an educational context. The vast majority of interventions are school-based due to the nature of school structures, which can be more easily regulated and observed than home, neighborhood, and other out-of-school environments. The findings shown in the present study, however, suggest that close friendships are also important regardless of the context in which they take place. All contexts, from the classroom to the neighborhood, are important developmental niches where children may gain emotional and instrumental support that contributes to their positive functioning. Thus coaches, youth leaders, and parents should encourage and support friendships in each of their respective contexts. In fact, afterschool programs have recognized that support from friends may aid children's positive social behavior and academic achievement (Roth, Brooks-Gunn, Murray, & Foster, 1998) and the present study suggests that friendships in afterschool programs may be just as beneficial for

children's positive functioning as classroom-based friendships. Close, supportive friendships appear to be important for children no matter where they take place, and adults concerned with the well-being of children should both take comfort in knowing that a child without a close friend at school is not worse off if they have close friend outside of school, and take heed to support the development of quality friendships both in and outside of school.

### **4.3 LIMITATIONS AND FUTURE DIRECTIONS**

Although the present study used a large, longitudinal dataset to investigate between- and within-child associations between friendship quality and positive functioning in an ecologically-based model, several limitations of the present study should be addressed. First, the present study did not measure children's perceptions of their relationship quality with their mother and teachers. These measures were not available in the dataset at each time point during third through sixth grades, and thus children's reports of their relationship quality with their mother and teachers could not be examined with the longitudinal analyses conducted in this study. Assessing children's perceptions of the quality of each of these relationships would allow for the comparison of these relationships during middle childhood, and further conclusions could be made about the relative significance of each of these relationships in promoting positive functioning from the study child's perspective. Including the relationship quality of friends, mothers, and teachers throughout middle childhood is an underutilized approach. Future studies on relationships should strive for ecologically-appropriate models that include various

relationships important to children's development and extend the present study by including children's perceptions of each relationship.

The ecological approach used in the present study to explore associations between friendship quality and children's social and academic functioning involved incorporating relationship quality with children's mothers and teachers. This approach accounted for these important relationships with adults, thereby reducing the risk of overestimating the importance of friendship quality for children's positive functioning. However, the present study did not examine the full ecological model. Including relationship quality with fathers, siblings, peers, and other family members and caregivers would more fully represent all of the important people in children's lives that may play a role in their development and positive functioning. Including other factors in children's exosystem and macrosystem, such as school programs and policies, neighborhoods, and other such factors that affect children's social and academic functioning would more accurately account for the multitude of influences on children's development (Bronfenbrenner, 1979). Although including various people and systems in research is more costly, complicated, and time-consuming, the developmental field needs to move in this direction to further disentangle the complex associations between the multiple people and contexts that influence children's development.

An important future direction in the friendship literature involves investigating characteristics that may further explain the importance of friendships for children's development. The present study examined a child characteristic, engagement, which may make friendship quality more important for children with lower levels of this characteristic. Child characteristics have not been well examined in the friendship literature, and remain an important next step in investigating the nuances of the importance of friendship quality for children's positive



functioning. Characteristics of friends, however, have been examined in the friendship literature and previous research indicates friend characteristics such as prosocial behavior and motivation affect children's own behavior and motivation (Altermatt & Pomerantz, 2003, 2005; Wentzel, Barry, and Caldwell, 2004) and are important moderators of associations between friendship quality and prosocial goals (Barry & Wentzel, 2006). Friend characteristics, however, could not be examined in the present study due to lack of data on friends at each time point from third through sixth grade, and thus the present study could not investigate whether children's functioning is affected by friends' characteristics or whether associations between friend characteristics and child characteristics are moderated by friendship quality. Examining friend characteristics and friendship quality, as well as moderation of characteristics by quality, across multiple time points is a key next step in understanding the effects of friends on children's developmental trajectories.

#### **4.4 CONCLUSIONS**

The current study examined the importance of friendship quality for children's social and academic functioning using an ecologically-based model. This model examined the independent contributions of children's friendship quality to their positive functioning, accounting for relationships that children have with important adults in their lives, namely mothers and teachers. This study also examined children during middle childhood, a developmental period largely overlooked in extant research but an important and relevant one for the development of friendships. Children were examined across third through sixth grades, providing a longitudinal

analysis of the importance of friendship quality for children's development throughout this time. Children's proximity to their friend during the school day, as well as children's engagement, were also considered in this study to investigate whether classroom-based friendships are more supportive for children's positive functioning and whether friendships may be particularly important for children with lower levels of engagement. Analyses examined both between-child comparisons and within-child changes in associations between friendship quality and social functioning and academic achievement to decrease selection and omitted variable bias and make causal inferences about the extent to which friendship quality promotes children's development during middle childhood.

The findings of the present study suggest two main conclusions. First, friendship quality is important for children's positive functioning. Children with higher levels of friendship quality displayed lower levels of internalizing problems, and growth in a child's friendship quality was associated with growth in his or her reading and math grades and social skills over time. The importance of friendship quality for children's lower levels of internalizing problems and growth in reading grades was largely unmitigated by relationship quality with mothers and teachers, age, proximity in school to the close friend, or engagement levels. Thus, friendship quality appears to be a developmentally-supportive context by which to promote positive development for children. Although the increasing pressure on schools for their students to perform highly in reading and math has left little time or incentive to spend in other aspects of education, the findings of the present study suggest that investing in the promotion of friendship quality may boost children's performance in school and reduce behavior problems.

The second conclusion drawn from the present study is that friendship quality is important for children's development throughout middle childhood. Findings in the present study

indicate that friendship quality supports children's social and academic functioning much earlier than adolescence. Associations between friendship quality and social and academic functioning so often discussed during adolescence begin already in elementary school, and thus research, programming, and policies should give attention to the friendships of younger children as a means by which to support positive development.

**Table 1. Descriptive Statistics of Relationship Quality, Social and Academic Functioning, and Demographic Variables by Grade (N=1364)**

	Early <sup>a</sup>		Third grade		Fourth grade		Fifth grade		Sixth grade	
	<i>M/%</i>	<i>SD</i>	<i>M/%</i>	<i>SD</i>	<i>M/%</i>	<i>SD</i>	<i>M/%</i>	<i>SD</i>	<i>M/%</i>	<i>SD</i>
<b>Relationship Quality</b>										
Friendship			3.96	0.66	4.00	0.67	4.14	0.60	4.14	0.64
Mother-child			62.96	7.58	62.87	7.76	62.10	7.85	61.13	8.34
Teacher-child			63.24	9.24	62.82	8.98	61.99	9.28	60.85	9.30
<b>Friendship Factors</b>										
Same classroom			0.54		0.38		0.40			
Different classroom			0.26		0.31		0.32			
Not at school			0.20		0.31		0.28			
Stability									0.97	1.08
<b>Outcomes</b>										
Internalizing problems	49.26	9.37	51.52	9.74	51.04	9.61	50.76	9.69	50.21	9.41
Externalizing problems	50.92	8.78	51.66	9.40	50.99	9.12	51.54	9.26	50.57	9.10
Social skills	102.67	13.98	101.90	14.63	101.52	14.27	102.25	14.69	102.28	14.46
Reading grades	3.33	1.17	3.39	1.22	3.40	1.21	3.52	1.17	3.44	1.18
Math grades	3.49	0.99	3.44	1.07	3.40	1.10	3.41	1.12	3.37	1.12
<b>Child Characteristics</b>										
Male	0.52									
White	0.81									
Black	0.13									
Hispanic	0.06									
Temperament	3.18	0.41								
Hostile intent			0.30	0.23	0.29	0.23	0.33	0.26		
Engagement			10.36	2.12						
Age in months			107.54	3.71	118.96	4.10	131.34	3.85	142.57	4.28
<b>Family Characteristics</b>										
Mother age	28.11	5.63								
Mother education	14.24	2.51								
Mother neuroticism	29.83	7.17								
Mother	42.47	5.88								

extraversion									
Mother	46.22	5.32							
agreeableness									
Mother			9.43	8.79		8.95	8.49	9.02	8.79
depression									
Mother hours			27.09	19.14	27.62	19.19	28.22	19.10	28.42
of employment									19.46
Married			0.66		0.66		0.65		0.65
Income-to-			4.25	3.68	4.40	3.83	4.43	3.90	4.50
needs									4.05
Number of			2.40	0.97	2.45	0.99	2.45	1.02	2.44
children									1.03
<b>Teacher</b>									
<b>Characteristics</b>									
Experience			14.75	10.73	14.50	10.86	15.11	11.10	14.38
									10.70

*Note.* <sup>a</sup>The Early column represents data obtained before middle childhood: Gender, race/ethnicity, and mother age and education were reported at 1 month old; child temperament and mother personality were reported at 6 months old; early controls of outcomes were collected at first grade.

**Table 2. Friendship Quality and Children's Functioning Across Middle Childhood:  
Unconditional Models**

	<i>Intercept</i> <sup>a</sup>		<i>Slope</i> <sup>b</sup>	
	Coefficient	SE	Coefficient	SE
Internalizing	51.01***	0.26	-0.03*	0.01
Externalizing	51.33***	0.22	-0.02*	0.01
Social Skills	101.95***	0.34	0.01	0.02
Reading Grades	3.44***	0.03	0.003*	0.00
Math Grades	3.41***	0.03	-0.002*	0.00

*Note.* SE = Standard Error. <sup>a</sup> Average score. <sup>b</sup> Rate of change across time.

<sup>†</sup>  $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 3. Associations between Friendship Quality and Social Functioning Across Middle Childhood: Hierarchical Models**

		Internalizing			Externalizing			Social Skills		
		Model 1	Model 2	Model 3- full model	Model 1	Model 2	Model 3- full model	Model 1	Model 2	Model 3- full model
<b>Panel 1: Between-Child</b>										
<b>Estimates</b>										
Average Functioning										
Intercept		51.04*** (0.40)	51.36*** (0.43)	52.06*** (0.38)	50.10*** (0.32)	50.73*** (0.31)	52.03*** (0.24)	103.38*** (0.55)	102.56*** (0.56)	100.08*** (0.34)
Average friendship quality		-1.67** (0.44)	-1.57** (0.43)	-1.29* (0.46)	-0.86 (0.52)	-0.27 (0.35)	0.12 (0.31)	2.33** (0.75)	1.68* (0.65)	0.82 (0.63)
Average mother-child relationship quality				-0.02 (0.03)			-0.03 (0.03)			0.11** (0.04)
Average teacher-child relationship quality				-0.29*** (0.03)			-0.54*** (0.04)			1.02*** (0.05)
Functioning Slope										
Intercept		-0.02 (0.02)	-0.03 (0.02)	-0.05** (0.02)	-0.04** (0.01)	-0.04** (0.01)	-0.07*** (0.01)	0.03 (0.02)	0.03 (0.02)	0.08** (0.02)
Average friendship quality		-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	0.02 (0.02)	0.01 (0.02)	0.01 (0.01)	0.01 (0.04)	0.01 (0.04)	0.02 (0.03)
Average mother-child relationship quality				-0.00 (0.00)			0.00 (0.00)			-0.00 (0.00)
Average teacher-child relationship quality				0.00 (0.00)			0.00 (0.00)			0.00 (0.00)
<b>Panel 2: Within-Child</b>										
<b>Estimates</b>										

Friendship quality	-0.05 (0.43)	0.02 (0.43)	0.19 (0.46)	-0.24 (0.25)	-0.17 (0.26)	-0.01 (0.28)	1.17** (0.42)	1.16** (0.42)	0.81 <sup>t</sup> (0.42)
Mother-child relationship quality			-0.01 (0.04)			-0.01 (0.03)			0.04 (0.05)
Teacher-child relationship quality			-0.34*** (0.03)			-0.39*** (0.02)			0.77*** (0.03)

*Note.* Unstandardized coefficients are displayed only for the main independent variables of interest. Robust standard errors are shown in parentheses.

Model 1 includes typical covariates used in past studies on friendship: Age (within-child); gender, race/ethnicity, and friendship stability (between-child).

Model 2 adds additional covariates related to friendship quality or positive functioning: income, number of children in home, mother hours of employment, marital status, and teacher experience (within-child); mother age, mother education, mother neuroticism, mother extraversion, mother agreeableness, child temperament at 6 months, average number of children in home, average income, average mother hours of employment, average marital status, average mother depression, average child's reports of hostile intent, percent of time in the same school, percent of time not at the same school, average teacher experience, and functioning at 1stgrade (between-child) .

Model 3 adds mother-child and teacher-child relationship quality.

<sup>t</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .



**Table 4. Associations between Friendship Quality and Academic Achievement Across Middle Childhood: Hierarchical Models**

	Reading			Math		
	Model 1	Model 2	Model 3- full model	Model 1	Model 2	Model 3- full model
<b>Panel 1: Between-Child Estimates</b>						
Average Functioning						
Intercept	3.69*** (0.04)	3.55*** (0.04)	3.51*** (0.04)	3.54*** (0.04)	3.49*** (0.03)	3.44*** (0.03)
Average friendship quality	0.07 (0.06)	0.08 (0.06)	0.06 (0.05)	0.03 (0.06)	0.02 (0.06)	0.00 (0.06)
Average mother-child relationship quality			0.01 (0.00)			0.00 (0.00)
Average teacher-child relationship quality			0.02*** (0.00)			0.02*** (0.00)
Functioning Slope						
Intercept	0.00* (0.00)	0.00* (0.00)	0.00* (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 <sup>t</sup> (0.00)
Average friendship quality	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Average mother-child relationship quality			0.00 (0.00)			0.00 (0.00)
Average teacher-child relationship quality			0.00 <sup>t</sup> (0.00)			0.00 <sup>t</sup> (0.00)
<b>Panel 2: Within-Child Estimates</b>						
Friendship quality	0.11** (0.03)	0.12** (0.03)	0.11** (0.03)	0.07* (0.03)	0.07* (0.03)	0.06 <sup>t</sup> (0.03)
Mother-child relationship quality			0.00 (0.00)			0.00 (0.00)

Teacher-child relationship quality	0.01*** (0.00)	0.01*** (0.00)
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*Note.* Unstandardized coefficients are displayed only for the main independent variables of interest. Robust standard errors are shown in parentheses.

Model 1 includes typical covariates used in past studies on friendship: Age (within-child); gender, race/ethnicity, and friendship stability (between-child).

Model 2 adds additional covariates related to friendship quality or positive functioning: income, number of children in home, mother hours of employment, marital status, and teacher experience (within-child); mother age, mother education, mother neuroticism, mother extraversion, mother agreeableness, child temperament at 6 months, average number of children in home, average income, average mother hours of employment, average marital status, average mother depression, average child's reports of hostile intent, percent of time in the same school, percent of time not at the same school, average teacher experience, and functioning at 1stgrade (between-child) .

Model 3 adds mother-child and teacher-child relationship quality.

<sup>t</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## APPENDIX

### TABLES OF FULL MODELS

**Table 5. Associations between Friendship Quality and Social Functioning and Academic Achievement Across Middle Childhood: Research Questions 1, 2, and 5a**

	Social Functioning			Academic Achievement	
	Internalizing	Externalizing	Social Skills	Reading	Math
<b>Between-Child Estimates</b>					
Average Functioning					
Intercept	52.06*** (0.38)	52.03*** (0.24)	100.08*** (0.34)	3.51*** (0.04)	3.44*** (0.03)
Average friendship quality	-1.29* (0.46)	0.12 (0.31)	0.82 (0.63)	0.06 (0.05)	0.00 (0.06)
Average mother-child relationship quality	-0.02 (0.03)	-0.03 (0.03)	0.11** (0.04)	0.01 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	-0.29*** (0.03)	-0.54*** (0.04)	1.02*** (0.05)	0.02*** (0.00)	0.02*** (0.00)
Male	-1.69*** (0.37)	-1.75*** (0.31)	3.85*** (0.51)	-0.03 (0.06)	0.02 (0.05)
Hispanic	-0.39 (0.74)	0.30 (0.62)	-0.59 (0.93)	-0.15 (0.11)	-0.07 (0.09)
Black	-1.20 (0.85)	1.45* (0.58)	-0.66 (0.93)	-0.34** (0.09)	-0.36*** (0.08)
Mother age	-0.01 (0.05)	-0.03 (0.03)	-0.04 (0.05)	0.00 (0.00)	0.00 (0.01)
Mother education	-0.24**	-0.07	0.35***	0.06***	0.05***

	(0.08)	(0.07)	(0.09)	(0.01)	(0.01)
Friendship stability	-0.13	-0.31 <sup>t</sup>	0.19	0.04*	-0.00
	(0.20)	(0.16)	(0.19)	(0.02)	(0.02)
Mother	-0.05	0.01	0.05	0.00	0.00
neuroticism	(0.04)	(0.03)	(0.03)	(0.00)	(0.00)
Mother	-0.01	0.04	0.03	-0.00	-0.00
extraversion	(0.03)	(0.04)	(0.05)	(0.00)	(0.00)
Mother	0.00	-0.08*	0.03	-0.00	-0.00
agreeableness	(0.04)	(0.04)	(0.05)	(0.01)	(0.00)
Temperament	0.23	-0.23	-0.43	-0.06	-0.07
	(0.45)	(0.44)	(0.54)	(0.05)	(0.05)
Average number of	-0.39 <sup>t</sup>	0.12	-0.21	-0.08**	-0.08**
children	(0.21)	(0.20)	(0.25)	(0.02)	(0.02)
Average income	0.01	0.04	0.09	0.02	0.00
	(0.06)	(0.04)	(0.07)	(0.01)	(0.01)
Average mother	-0.03**	0.01	0.00	-0.00*	-0.00
employment	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Average mother	-0.77	-0.74	0.67	0.01	0.05
married	(0.55)	(0.47)	(0.56)	(0.06)	(0.06)
Average mother	0.10**	0.01	-0.04	-0.01	-0.00
depression	(0.03)	(0.03)	(0.04)	(0.00)	(0.00)
Average hostile	-0.41	2.28*	-1.07	-0.12	-0.11
intent	(1.04)	(0.94)	(1.53)	(0.13)	(0.14)
<b>Same school</b>	<b>0.31</b>	<b>0.72</b>	<b>-1.05</b>	<b>-0.01</b>	<b>-0.19*</b>
	<b>(0.73)</b>	<b>(0.76)</b>	<b>(0.80)</b>	<b>(0.10)</b>	<b>(0.08)</b>
<b>Different school</b>	<b>0.13</b>	<b>0.39</b>	<b>-0.17</b>	<b>0.01</b>	<b>-0.13</b>
	<b>(0.65)</b>	<b>(0.65)</b>	<b>(0.74)</b>	<b>(0.10)</b>	<b>(0.08)</b>
Average teacher	-0.11**	-0.07*	0.11**	0.01*	0.01
experience	(0.03)	(0.03)	(0.04)	(0.00)	(0.00)
Functioning at 1 <sup>st</sup>	0.13***	0.29***	0.18***	0.47***	0.50***
grade	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
Functioning Slope					
Intercept	-0.05**	-0.07***	0.08**	0.00*	0.00 <sup>t</sup>
	(0.02)	(0.01)	(0.02)	(0.00)	(0.00)
Average friendship	-0.03	0.01	0.02	-0.00	-0.00
quality	(0.02)	(0.01)	(0.03)	(0.00)	(0.00)
Average mother-	-0.00	0.00	-0.00	0.00	0.00
child relationship	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
quality					
Average teacher-	0.00	0.00	0.00	0.00 <sup>t</sup>	0.00 <sup>t</sup>
child relationship	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
quality					
Male	-0.01	0.03	-0.03	-0.00	-0.01*
	(0.02)	(0.02)	(0.03)	(0.00)	(0.00)
Hispanic	-0.06	0.03	-0.04	0.00	-0.00

	(0.05)	(0.04)	(0.05)	(0.00)	(0.00)
Black	0.00	0.01	-0.00	-0.00	-0.00
	(0.03)	(0.03)	(0.05)	(0.00)	(0.00)
Mother age	-0.00	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mother education	-0.01	-0.00	-0.01*	-0.00	0.00
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Friendship stability	-0.01	0.01	-0.01	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Mother neuroticism	0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mother extraversion	-0.00	-0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mother agreeableness	0.00	0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Temperament	0.01	0.00	-0.01	-0.00	-0.00
	(0.03)	(0.02)	(0.04)	(0.00)	(0.00)
Average number of children	-0.01	-0.00	-0.02	-0.00	0.00
	(0.01)	(0.01)	(0.02)	(0.00)	(0.00)
Average income	0.00	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Average mother employment	-0.00	-0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Average mother married	0.02	-0.00	-0.06	-0.00	0.00
	(0.03)	(0.02)	(0.04)	(0.00)	(0.00)
Average mother depression	0.00	-0.00	-0.00	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Average hostile intent	-0.09	-0.02	0.04	-0.01 <sup>t</sup>	0.00
	(0.06)	(0.04)	(0.10)	(0.00)	(0.00)
Same school	<b>-0.05</b>	<b>0.00</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>
	<b>(0.05)</b>	<b>(0.04)</b>	<b>(0.06)</b>	<b>(0.00)</b>	<b>(0.00)</b>
Different school	<b>0.03</b>	<b>-0.00</b>	<b>-0.04</b>	<b>0.01**</b>	<b>0.00</b>
	<b>(0.04)</b>	<b>(0.02)</b>	<b>(0.04)</b>	<b>(0.00)</b>	<b>(0.00)</b>
Average teacher experience	0.00	-0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Functioning at 1 <sup>st</sup> grade	-0.00	-0.00	-0.00	-0.00***	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
<b>Within-Child Estimates</b>					
Friendship quality	0.19	-0.01	0.81 <sup>t</sup>	0.11**	0.06 <sup>t</sup>
	(0.46)	(0.28)	(0.42)	(0.03)	(0.03)
Mother-child relationship quality	-0.01	-0.01	0.04	0.00	0.00
	(0.04)	(0.03)	(0.05)	(0.00)	(0.00)
Teacher-child relationship quality	-0.34***	-0.39***	0.77***	0.01***	0.01***
	(0.03)	(0.02)	(0.03)	(0.00)	(0.00)

Income	-0.03 (0.10)	0.06 (0.09)	0.04 (0.20)	0.01 (0.01)	0.00 (0.01)
Number of children	-0.51 (0.57)	-0.55 (0.38)	0.13 (0.56)	0.03 (0.07)	0.03 (0.05)
Mother employment	0.01 (0.02)	0.03 <sup>†</sup> (0.01)	-0.02 (0.02)	-0.00 (0.00)	-0.00 (0.00)
Mother married	0.28 (0.92)	0.67 (0.83)	0.99 (1.39)	0.07 (0.09)	0.06 (0.09)
Teacher experience	-0.05 <sup>†</sup> (0.02)	-0.07*** (0.01)	0.06** (0.02)	-0.00* (0.00)	0.00 (0.00)

*Note.* Unstandardized coefficients of all predictor and control variables are displayed. Robust standard errors are shown in parentheses. <sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 6. Moderation of Friendship Quality by Mother and Teacher Relationship Quality:**  
**Research Question 3**

	Social Functioning			Academic Achievement	
	Internalizing	Externalizing	Social Skills	Reading	Math
<b>Between-Child Estimates</b>					
Average Functioning					
Intercept	52.00*** (0.39)	52.05*** (0.24)	100.02*** (0.36)	3.51*** (0.04)	3.44*** (0.03)
Average friendship quality	-1.22* (0.44)	0.09 (0.29)	0.89 (0.62)	0.05 (0.06)	0.01 (0.05)
Average mother-child relationship quality	-0.02 (0.03)	-0.03 (0.03)	0.11** (0.04)	0.01 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	-0.39*** (0.03)	-0.54*** (0.04)	1.02*** (0.05)	0.02*** (0.00)	0.02*** (0.00)
<b>Friendship quality X mother-child relationship quality</b>	<b>0.00 (0.05)</b>	<b>0.00 (0.05)</b>	<b>-0.04 (0.07)</b>	<b>0.00 (0.01)</b>	<b>-0.00 (0.01)</b>
<b>Friendship quality X teacher-child relationship quality</b>	<b>0.06 (0.06)</b>	<b>-0.02 (0.06)</b>	<b>0.09 (0.07)</b>	<b>-0.00 (0.01)</b>	<b>0.01 (0.01)</b>
Male	-1.66*** (0.37)	-1.75*** (0.31)	3.88*** (0.51)	-0.03 (0.06)	0.02 (0.05)
Hispanic	-0.36 (0.73)	0.31 (0.61)	-0.59 (0.93)	-0.15 (0.11)	-0.07 (0.09)
Black	-1.16 (0.86)	1.44* (0.58)	-0.63 (0.94)	-0.34** (0.09)	-0.35*** (0.08)
Mother age	-0.01 (0.05)	-0.03 (0.03)	-0.03 (0.05)	0.00 (0.00)	0.00 (0.01)
Mother education	-0.24** (0.08)	-0.07 (0.07)	0.35*** (0.09)	0.06*** (0.01)	0.05*** (0.01)
Friendship stability	-0.13 (0.19)	-0.30 <sup>t</sup> (0.15)	0.19 (0.19)	0.04* (0.02)	-0.00 (0.02)
Mother neuroticism	-0.05 (0.04)	0.01 (0.03)	0.05 (0.03)	0.00 (0.00)	-0.00 (0.00)
Mother extraversion	-0.01 (0.03)	0.04 (0.04)	0.02 (0.05)	-0.00 (0.00)	-0.00 (0.00)

Mother agreeableness	0.00 (0.04)	-0.08* (0.04)	0.03 (0.05)	-0.00 (0.01)	-0.00 (0.00)
Temperament	0.22 (0.43)	-0.23 (0.44)	-0.44 (0.55)	-0.06 (0.05)	-0.07 (0.05)
Average number of children	-0.39 <sup>t</sup> (0.21)	0.12 (0.20)	-0.21 (0.24)	-0.08** (0.02)	-0.08** (0.02)
Average income	0.01 (0.06)	0.04 (0.04)	0.09 (0.07)	0.02 (0.01)	0.00 (0.01)
Average mother employment	-0.03** (0.01)	0.01 (0.01)	0.00 (0.01)	-0.00* (0.00)	-0.00 (0.00)
Average mother married	-0.80 (0.54)	-0.74 (0.47)	0.66 (0.55)	0.01 (0.06)	0.05 (0.06)
Average mother depression	0.09** (0.03)	0.01 (0.03)	-0.04 (0.04)	-0.01 (0.00)	-0.00 (0.00)
Average hostile intent	-0.43 (1.05)	2.28* (0.93)	-1.09 (1.53)	-0.12 (0.13)	-0.11 (0.14)
Same school	0.30 (0.73)	0.74 (0.76)	-1.06 (0.80)	-0.01 (0.10)	-0.19* (0.08)
Different school	0.12 (0.65)	0.40 (0.65)	-0.16 (0.74)	0.01 (0.10)	-0.13 (0.08)
Average teacher experience	-0.11** (0.03)	-0.07* (0.03)	0.11** (0.04)	0.01* (0.00)	0.01 (0.00)
Functioning at 1 <sup>st</sup> grade	0.13*** (0.02)	0.29*** (0.03)	0.18*** (0.02)	0.47*** (0.02)	0.50*** (0.02)
Functioning Slope					
Intercept	-0.05** (0.02)	-0.07*** (0.01)	0.08** (0.02)	0.00* (0.00)	0.00 (0.00)
Average friendship quality	-0.03 (0.02)	0.01 (0.01)	0.02 (0.03)	-0.00 (0.00)	-0.00 (0.00)
Average mother-child relationship quality	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 <sup>t</sup> (0.00)	0.00 <sup>t</sup> (0.00)
<b>Friendship quality X mother-child relationship quality</b>	<b>0.00 (0.00)</b>	<b>-0.00 (0.00)</b>	<b>-0.00 (0.00)</b>	<b>0.00 (0.00)</b>	<b>-0.00 (0.00)</b>
<b>Friendship quality X teacher-child relationship quality</b>	<b>-0.00 (0.00)</b>	<b>-0.00 (0.00)</b>	<b>0.00 (0.00)</b>	<b>0.00 (0.00)</b>	<b>0.00 (0.00)</b>
Male	-0.01 (0.02)	0.03 (0.02)	-0.03 (0.03)	-0.00 (0.00)	-0.01* (0.00)



Hispanic	-0.06 (0.05)	0.03 (0.04)	-0.04 (0.05)	0.00 (0.00)	-0.00 (0.00)
Black	0.00 (0.03)	0.01 (0.03)	-0.00 (0.05)	-0.00 (0.00)	-0.00 (0.00)
Mother age	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Mother education	-0.01 (0.01)	-0.00 (0.00)	-0.01 <sup>t</sup> (0.01)	-0.00 (0.00)	0.00 (0.00)
Friendship stability	-0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)	0.00 (0.00)
Mother neuroticism	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Mother extraversion	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Mother agreeableness	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Temperament	0.01 (0.03)	0.00 (0.02)	-0.01 (0.04)	-0.00 (0.00)	-0.00 (0.00)
Average number of children	-0.01 (0.01)	-0.00 (0.01)	-0.02 (0.02)	-0.00 (0.00)	0.00 (0.00)
Average income	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Average mother employment	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Average mother married	0.02 (0.03)	-0.00 (0.02)	-0.06 (0.04)	-0.00 (0.00)	0.00 (0.00)
Average mother depression	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00* (0.00)
Average hostile intent	-0.09 (0.07)	-0.02 (0.04)	0.04 (0.10)	-0.01 <sup>t</sup> (0.00)	0.00 (0.00)
Same school	-0.05 (0.05)	0.00 (0.04)	0.05 (0.06)	0.00 (0.00)	0.00 (0.00)
Different school	0.03 (0.04)	-0.00 (0.02)	-0.04 (0.04)	0.01** (0.00)	0.00 (0.00)
Average teacher experience	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Functioning at 1 <sup>st</sup> grade	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00*** (0.00)	-0.00* (0.00)
<b>Within-Child</b>					
<b>Estimates</b>					
Friendship quality	0.19 (0.45)	-0.02 (0.28)	0.81 <sup>t</sup> (0.42)	0.11** (0.03)	0.08* (0.03)
Mother-child relationship quality	-0.01 (0.04)	-0.01 (0.03)	0.04 (0.05)	0.00 (0.00)	0.00 (0.00)
Teacher-child	-0.34***	-0.39***	0.78***	0.01***	0.01***

relationship quality	(0.03)	(0.02)	(0.03)	(0.00)	(0.00)
<b>Friendship quality</b>	<b>-0.05</b>	<b>-0.09</b>	<b>-0.04</b>	<b>-0.00</b>	<b>0.00</b>
<b>X mother-child</b>	<b>(0.10)</b>	<b>(0.08)</b>	<b>(0.11)</b>	<b>(0.01)</b>	<b>(0.01)</b>
<b>relationship</b>					
<b>quality</b>					
<b>Friendship quality</b>	<b>-0.03</b>	<b>-0.01</b>	<b>0.02</b>	<b>0.00</b>	<b>-0.00</b>
<b>X teacher-child</b>	<b>(0.06)</b>	<b>(0.04)</b>	<b>(0.07)</b>	<b>(0.00)</b>	<b>(0.00)</b>
<b>relationship</b>					
<b>quality</b>					
Income	-0.03	0.06	0.04	0.01	0.00
	(0.10)	(0.09)	(0.20)	(0.01)	(0.01)
Number of children	-0.50	-0.54	0.13	0.03	0.03
	(0.57)	(0.38)	(0.57)	(0.07)	(0.05)
Mother	0.01	0.03 <sup>t</sup>	-0.02	-0.00	-0.00
employment	(0.02)	(0.01)	(0.02)	(0.00)	(0.00)
Mother married	0.27	0.66	0.99	0.07	0.06
	(0.92)	(0.83)	(1.41)	(0.09)	(0.09)
Teacher experience	-0.05 <sup>*</sup>	-0.07***	0.06**	-0.00*	0.00
	(0.02)	(0.01)	(0.02)	(0.00)	(0.00)

*Note.* Unstandardized coefficients of all predictor and control variables are displayed. Robust standard errors are shown in parentheses. <sup>t</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 7. Moderation of Friendship Quality by Age: Research Question 4**

	Social Functioning			Academic Achievement	
	Internalizing	Externalizing	Social Skills	Reading	Math
<b>Between-Child Estimates</b>					
Average Functioning					
Intercept	52.02*** (0.41)	51.99*** (0.24)	100.01*** (0.36)	3.51*** (0.04)	3.44*** (0.03)
Average friendship quality	-1.27* (0.46)	0.14 (0.30)	0.86 (0.62)	0.06 (0.05)	0.01 (0.06)
Average mother-child relationship quality	-0.02* (0.03)	-0.03 (0.03)	0.11** (0.04)	0.01 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	-0.29*** (0.03)	-0.54*** (0.04)	1.02*** (0.05)	0.02*** (0.00)	0.04*** (0.00)
Male	-1.68*** (0.38)	-1.73*** (0.31)	3.89*** (0.52)	-0.03 (0.06)	0.02*** (0.00)
Hispanic	-0.36 (0.73)	0.33 (0.61)	-0.55 (0.93)	-0.15 (0.11)	-0.07 (0.09)
Black	-1.18 (0.86)	1.48* (0.58)	-0.61 (0.94)	-0.34** (0.09)	-0.35** (0.08)
Mother age	-0.01 (0.05)	-0.03 (0.03)	-0.03 (0.05)	0.00 (0.00)	0.00 (0.01)
Mother education	-0.24** (0.08)	-0.08 (0.07)	0.34** (0.10)	0.06*** (0.01)	0.05*** (0.01)
Friendship stability	-0.14 (0.20)	-0.31 <sup>t</sup> (0.16)	0.18 (0.19)	0.04* (0.02)	-0.00 (0.02)
Mother neuroticism	-0.05 (0.04)	0.01 (0.03)	0.05 (0.03)	0.00 (0.00)	0.00 (0.00)
Mother extraversion	-0.01 (0.03)	0.04 (0.04)	0.03 (0.05)	-0.00 (0.00)	-0.00 (0.00)
Mother agreeableness	0.00 (0.04)	-0.08* (0.04)	0.03 (0.05)	-0.00 (0.01)	-0.00 (0.00)
Temperament	0.22 (0.44)	-0.24 (0.44)	-0.45 (0.55)	-0.06 (0.05)	-0.07 (0.05)
Average number of children	-0.39 <sup>t</sup> (0.21)	0.13 (0.20)	-0.20 (0.25)	-0.08** (0.02)	-0.08** (0.02)
Average income	0.01 (0.06)	0.04 (0.04)	0.09 (0.07)	0.02 (0.01)	0.00 (0.01)

Average mother employment	-0.03** (0.01)	0.01 (0.01)	0.00 (0.01)	-0.00* (0.00)	-0.00 (0.00)
Average mother married	-0.78 (0.54)	-0.76 (0.47)	0.66 (0.56)	0.01 (0.06)	0.04 (0.06)
Average mother depression	0.10** (0.03)	0.01 (0.03)	-0.04 (0.04)	-0.01 (0.00)	-0.00 (0.00)
Average hostile intent	-0.43 (1.04)	2.27* (0.94)	-1.10 (1.52)	-0.12 (0.13)	-0.11 (0.14)
Same school	0.32 (0.74)	0.74 (0.76)	-1.04 (0.80)	-0.01 (0.10)	-0.19* (0.08)
Different school	0.14 (0.65)	0.41 (0.64)	-0.16 (0.74)	0.01 (0.10)	-0.13 (0.09)
Average teacher experience	-0.11** (0.03)	-0.07* (0.03)	0.11** (0.04)	0.01* (0.00)	0.01 (0.00)
Functioning at 1 <sup>st</sup> grade	0.13*** (0.02)	0.29*** (0.03)	0.18*** (0.02)	0.47*** (0.02)	0.50*** (0.02)
Functioning Slope					
Intercept	-0.05** (0.02)	-0.07*** (0.01)	0.08** (0.02)	0.00* (0.00)	0.00 <sup>t</sup> (0.00)
Average friendship quality	-0.03 (0.02)	0.01 (0.02)	0.03 (0.03)	-0.00 (0.00)	-0.00 (0.00)
Average mother-child relationship quality	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 <sup>t</sup> (0.00)	0.00 <sup>t</sup> (0.00)
Male	-0.01 (0.02)	0.03 (0.02)	-0.03 (0.03)	-0.00 (0.00)	-0.01* (0.00)
Hispanic	-0.06 (0.05)	0.03 (0.04)	-0.04 (0.05)	0.00 (0.00)	-0.00 (0.00)
Black	0.00 (0.03)	0.01 (0.03)	-0.00 (0.05)	-0.00 (0.00)	-0.00 (0.00)
Mother age	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Mother education	-0.01 (0.01)	-0.00 (0.00)	-0.01 <sup>t</sup> (0.01)	-0.00 (0.00)	0.00 (0.00)
Friendship stability	-0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)	0.00 (0.00)
Mother neuroticism	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Mother extraversion	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Mother agreeableness	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)

Temperament	0.01 (0.03)	0.00 (0.02)	-0.01 (0.04)	-0.00 (0.00)	-0.00 (0.00)
Average number of children	-0.01 (0.01)	-0.00 (0.01)	-0.02 (0.02)	-0.00 (0.00)	0.00 (0.00)
Average income	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Average mother employment	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Average mother married	0.02 (0.03)	-0.00 (0.02)	-0.06 (0.04)	-0.00 (0.00)	0.00 (0.00)
Average mother depression	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00* (0.00)
Average hostile intent	-0.09 (0.06)	-0.02 (0.04)	0.04 (0.10)	-0.01 <sup>t</sup> (0.01)	0.00 (0.00)
Same school	-0.05 (0.05)	0.00 (0.04)	0.05 (0.06)	0.00 (0.00)	0.00 (0.00)
Different school	0.03 (0.04)	-0.00 (0.02)	-0.04 (0.04)	0.01** (0.00)	0.00 (0.00)
Average teacher experience	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Functioning at 1 <sup>st</sup> grade	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00*** (0.00)	-0.00* (0.00)

### Within-Child Estimates

Friendship quality	0.20 (0.46)	0.00 (0.28)	0.83 <sup>t</sup> (0.41)	0.11** (0.03)	0.07* (0.03)
Mother-child relationship quality	-0.01 (0.04)	-0.01 (0.03)	0.04 (0.05)	0.00 (0.00)	0.00 (0.00)
Teacher-child relationship quality	-0.34*** (0.03)	-0.39*** (0.02)	0.78*** (0.03)	0.01*** (0.00)	0.01*** (0.00)
Income	-0.03 (0.10)	0.06 (0.09)	0.04 (0.20)	0.01 (0.01)	-0.00 (0.01)
Number of children	-0.50 (0.57)	-0.54 (0.38)	0.14 (0.57)	0.03 (0.07)	0.03 (0.05)
Mother employment	0.01 (0.02)	0.03 <sup>t</sup> (0.01)	-0.02 (0.02)	-0.00 (0.00)	-0.00 (0.00)
Mother married	0.28 (0.92)	0.67 (0.83)	0.99 (1.38)	0.07 (0.09)	0.06 (0.09)
Teacher experience	-0.05 <sup>t</sup> (0.02)	-0.07*** (0.01)	0.06** (0.02)	-0.00* (0.00)	0.00 (0.00)
<b>Friendship quality</b>	<b>0.02</b>	<b>0.03</b>	<b>0.04</b>	<b>0.00</b>	<b>0.01*</b>
<b>X age</b>	<b>(0.03)</b>	<b>(0.02)</b>	<b>(0.03)</b>	<b>(0.00)</b>	<b>(0.00)</b>

Note. Unstandardized coefficients of all predictor and control variables are displayed. Robust standard errors are shown in parentheses. <sup>t</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 8. Moderation of Friendship Quality by Friend Proximity: Research Question 5b**

	Social Functioning			Academic Achievement	
	Internalizing	Externalizing	Social Skills	Reading	Math
<b>Between-Child</b>					
<b>Estimates</b>					
Average Functioning					
Intercept	52.01*** (0.38)	52.03*** (0.24)	100.07*** (0.34)	3.51*** (0.04)	3.44*** (0.03)
Average friendship quality	-1.29* (0.45)	0.13 (0.31)	0.83 (0.63)	0.06 (0.06)	0.00 (0.06)
Average mother-child relationship quality	-0.02 (0.03)	-0.03 (0.03)	0.11** (0.04)	0.01 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	-0.29*** (0.03)	-0.54*** (0.04)	1.02*** (0.05)	0.02*** (0.00)	0.02*** (0.00)
Male	-1.69*** (0.37)	-1.75*** (0.31)	3.86*** (0.51)	-0.03 (0.06)	0.02 (0.05)
Hispanic	-0.39 (0.73)	0.30 (0.62)	-0.58 (0.93)	-0.15 (0.11)	-0.07 (0.09)
Black	-1.21 (0.84)	1.44* (0.57)	-0.66 (0.95)	-0.34** (0.09)	-0.36*** (0.08)
Mother age	-0.01 (0.05)	-0.03 (0.03)	-0.04 (0.05)	0.00 (0.00)	0.00 (0.01)
Mother education	-0.24** (0.08)	-0.07 (0.07)	0.35** (0.09)	0.06*** (0.01)	0.05*** (0.01)
Friendship stability	-0.13 (0.19)	-0.31 <sup>t</sup> (0.16)	0.18 (0.19)	0.04* (0.02)	-0.00 (0.02)
Mother neuroticism	-0.05 (0.04)	0.01 (0.03)	0.05 (0.03)	0.00 (0.00)	0.00 (0.00)
Mother extraversion	-0.01 (0.03)	0.04 (0.04)	0.03 (0.05)	-0.00 (0.00)	-0.00 (0.00)
Mother agreeableness	0.00 (0.04)	-0.08* (0.04)	0.03 (0.05)	-0.00 (0.01)	-0.00 (0.00)
Temperament	0.23 (0.45)	-0.23 (0.44)	-0.44 (0.55)	-0.06 (0.05)	-0.07 (0.05)
Average number of children	-0.39 <sup>t</sup> (0.21)	0.12 (0.20)	-0.21 (0.24)	-0.08** (0.02)	-0.08** (0.02)
Average income	0.00 (0.06)	0.04 (0.04)	0.10 (0.07)	0.02 (0.01)	0.00 (0.01)
Average mother	-0.03**	0.01	0.00	-0.00 <sup>t</sup>	-0.00

employment	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Average mother married	-0.77 (0.55)	-0.74 (0.46)	0.67 (0.56)	0.01 (0.06)	0.05 (0.06)
Average mother depression	0.10** (0.03)	0.01 (0.03)	-0.04 (0.04)	-0.01 (0.00)	-0.00 (0.00)
Average hostile intent	-0.40 (1.04)	2.28* (0.94)	-1.09 (1.52)	-0.12 (0.13)	-0.11 (0.14)
Same school	0.30 (0.73)	0.72 (0.76)	-1.07 (0.81)	-0.01 (0.10)	-0.20* (0.08)
Different school	0.13 (0.65)	0.39 (0.65)	-0.17 (0.74)	0.01 (0.10)	-0.13 (0.08)
<b>Friendship quality</b>	<b>-0.19</b>	<b>-0.12</b>	<b>-0.95</b>	<b>-0.17</b>	<b>-0.22</b>
<b>X same school</b>	<b>(1.56)</b>	<b>(1.03)</b>	<b>(1.61)</b>	<b>(0.17)</b>	<b>(0.17)</b>
<b>Friendship quality</b>	<b>0.33</b>	<b>0.18</b>	<b>-1.01</b>	<b>0.01</b>	<b>-0.04</b>
<b>X different school</b>	<b>(1.26)</b>	<b>(1.17)</b>	<b>(1.36)</b>	<b>(0.16)</b>	<b>(0.15)</b>
Average teacher experience	-0.11** (0.03)	-0.07* (0.03)	0.11** (0.04)	0.01* (0.00)	0.01 (0.00)
Functioning at 1 <sup>st</sup> grade	0.13*** (0.02)	0.30*** (0.03)	0.18*** (0.02)	0.47*** (0.02)	0.50*** (0.02)
Functioning Slope					
Intercept	-0.05** (0.02)	-0.07*** (0.01)	0.08** (0.02)	0.00* (0.00)	0.00 <sup>t</sup> (0.00)
Average friendship quality	-0.02 (0.02)	0.01 (0.01)	0.03 (0.03)	-0.00 (0.00)	-0.00 (0.00)
Average mother-child relationship quality	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 <sup>t</sup> (0.00)
Male	-0.01 (0.02)	0.03 (0.02)	-0.03 (0.03)	-0.00 (0.00)	-0.01* (0.00)
Hispanic	-0.06 (0.05)	0.03 (0.04)	-0.04 (0.05)	0.00 (0.00)	-0.00 (0.00)
Black	-0.00 (0.03)	0.01 (0.03)	-0.00 (0.05)	-0.00 (0.00)	-0.00 (0.00)
Mother age	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Mother education	-0.01 (0.01)	-0.00 (0.00)	-0.01 <sup>t</sup> (0.01)	-0.00 (0.00)	0.00 (0.00)
Friendship stability	-0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)	0.00 (0.00)
Mother neuroticism	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Mother	-0.00	-0.00	0.00	-0.00	-0.00

extraversion	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mother	0.00	0.00	-0.00	0.00	-0.00
agreeableness	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Temperament	0.01	0.00	-0.01	-0.00	-0.00
	(0.03)	(0.02)	(0.04)	(0.00)	(0.00)
Average number of	-0.01	-0.00	-0.02	-0.00	0.00
children	(0.01)	(0.01)	(0.02)	(0.00)	(0.00)
Average income	0.00	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Average mother	-0.00	-0.00	0.00	-0.00	-0.00
employment	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Average mother	0.02	-0.00	-0.06	-0.00	0.00
married	(0.03)	(0.02)	(0.04)	(0.00)	(0.00)
Average mother	0.00	-0.00	-0.00	0.00	-0.00*
depression	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Average hostile	-0.09	-0.02	0.04	-0.01 <sup>t</sup>	0.00
intent	(0.06)	(0.04)	(0.10)	(0.01)	(0.00)
Same school	-0.05	0.00	0.05	0.00	0.00
	(0.05)	(0.04)	(0.06)	(0.00)	(0.00)
Different school	0.03	-0.00	-0.04	0.01**	0.00
	(0.04)	(0.02)	(0.04)	(0.00)	(0.00)
<b>Friendship quality</b>	<b>-0.07</b>	<b>-0.01</b>	<b>0.11</b>	<b>0.00</b>	<b>0.00</b>
<b>X same school</b>	<b>(0.07)</b>	<b>(0.06)</b>	<b>(0.08)</b>	<b>(0.01)</b>	<b>(0.01)</b>
<b>Friendship quality</b>	<b>0.05</b>	<b>-0.03</b>	<b>0.14</b>	<b>0.01</b>	<b>-0.00</b>
<b>X different school</b>	<b>(0.08)</b>	<b>(0.06)</b>	<b>(0.10)</b>	<b>(0.01)</b>	<b>(0.01)</b>
Average teacher	0.00	-0.00	0.00	-0.00	-0.00
experience	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Functioning at 1 <sup>st</sup>	0.00	-0.00	-0.00	-0.00**	-0.00
grade	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
<b>Within-Child</b>					
<b>Estimates</b>					
Friendship quality	0.19	-0.01	0.80 <sup>t</sup>	0.11**	0.06 <sup>t</sup>
	(0.45)	(0.28)	(0.42)	(0.03)	(0.03)
Mother-child	-0.01	-0.01	0.04	0.00	0.00
relationship quality	(0.04)	(0.03)	(0.05)	(0.00)	(0.00)
Teacher-child	-0.34***	-0.39***	0.77***	0.01***	0.01***
relationship quality	(0.03)	(0.02)	(0.03)	(0.00)	(0.00)
Income	-0.03	0.06	0.04	0.01	0.00
	(0.10)	(0.09)	(0.20)	(0.01)	(0.01)
Number of children	-0.49	-0.55	0.14	0.03	0.03
	(0.56)	(0.38)	(0.56)	(0.07)	(0.05)
Mother	0.01	0.03 <sup>t</sup>	-0.02	-0.00	-0.00
employment	(0.02)	(0.01)	(0.02)	(0.00)	(0.00)
Mother married	0.27	0.66	0.98	0.07	0.06
	(0.90)	(0.83)	(1.38)	(0.09)	(0.09)



Teacher experience	-0.05 <sup>†</sup> (0.02)	-0.07*** (0.01)	0.06** (0.02)	-0.00* (0.00)	0.00 (0.00)
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*Note.* Unstandardized coefficients of all predictor and control variables are displayed. Robust standard errors are shown in parentheses. <sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 9. Moderation of Friendship Quality by Engagement: Research Question 6**

	Social Functioning			Academic Achievement	
	Internalizing	Externalizing	Social Skills	Reading	Math
<b>Between-Child Estimates</b>					
Average Functioning					
Intercept	52.13*** (0.37)	51.99*** (0.24)	99.82*** (0.33)	3.47*** (0.04)	3.41*** (0.03)
Average friendship quality	-1.31* (0.46)	-0.95 <sup>t</sup> (0.50)	0.88 (0.58)	0.06 (0.05)	0.00 (0.06)
Average mother-child relationship quality	-0.01 (0.03)	-0.12*** (0.03)	0.09* (0.04)	0.00 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	-0.29*** (0.03)	-0.69*** (0.03)	1.02*** (0.05)	0.02*** (0.00)	0.02*** (0.00)
Male	-1.82*** (0.36)	-1.67*** (0.31)	4.31*** (0.50)	0.03 (0.06)	0.08 (0.05)
Hispanic	-0.35 (0.73)	0.30 (0.62)	-0.68 (0.88)	-0.16 (0.11)	-0.08 (0.09)
Black	-1.25 (0.84)	1.49* (0.59)	-0.51 (0.83)	-0.31*** (0.08)	-0.34*** (0.08)
Mother age	-0.01 (0.05)	-0.03 (0.03)	-0.03 (0.05)	0.00 (0.00)	0.00 (0.01)
Mother education	-0.22** (0.08)	-0.08 (0.07)	0.31** (0.09)	0.06*** (0.01)	0.05*** (0.01)
Friendship stability	-0.11 (0.20)	-0.32 <sup>t</sup> (0.16)	0.12 (0.19)	0.02 (0.02)	-0.01 (0.02)
Mother neuroticism	-0.05 (0.04)	0.01 (0.03)	0.04 (0.03)	0.00 (0.00)	-0.00 (0.00)
Mother extraversion	-0.01 (0.03)	0.04 (0.04)	0.02 (0.05)	-0.00 (0.00)	-0.00 (0.00)
Mother agreeableness	0.00 (0.04)	-0.08* (0.04)	0.02 (0.05)	-0.00 (0.01)	-0.00 (0.01)
Temperament	0.27 (0.46)	-0.23 (0.45)	-0.56 (0.55)	-0.08 (0.05)	-0.08 <sup>t</sup> (0.05)
Average number of children	-0.41 <sup>t</sup> (0.20)	0.14 (0.20)	-0.14 (0.26)	-0.07** (0.02)	-0.07** (0.02)
Average income	0.01 (0.06)	0.03 (0.04)	0.06 (0.07)	0.01 (0.01)	-0.00 (0.01)

Average mother employment	-0.03** (0.01)	0.01 (0.01)	0.01 (0.01)	-0.00 <sup>t</sup> (0.00)	-0.00 (0.00)
Average mother married	-0.77 (0.56)	-0.75 (0.47)	0.68 (0.56)	0.01 (0.06)	0.05 (0.06)
Average mother depression	0.10** (0.03)	0.01 (0.03)	-0.04 (0.04)	-0.01 (0.00)	-0.00 (0.00)
Average hostile intent	-0.42 (1.04)	2.26* (0.94)	-1.12 (1.51)	-0.12 (0.13)	-0.11 (0.14)
Same school	0.25 (0.73)	0.79 (0.76)	-0.86 (0.80)	0.02 (0.09)	-0.17* (0.08)
Different school	0.09 (0.64)	0.44 (0.65)	-0.04 (0.73)	0.04 (0.10)	-0.11 (0.08)
Average teacher experience	-0.11** (0.03)	-0.07* (0.03)	0.10** (0.04)	0.01 <sup>t</sup> (0.00)	0.01 (0.00)
Functioning at 1 <sup>st</sup> grade	0.13*** (0.02)	0.29*** (0.03)	0.17*** (0.02)	0.43*** (0.03)	0.47*** (0.03)
Engagement	-0.14 (0.09)	0.11 (0.07)	0.50** (0.13)	0.09*** (0.01)	0.07*** (0.01)
<b>Friendship quality X engagement</b>	<b>-0.11 (0.17)</b>	<b>-0.14 (0.13)</b>	<b>0.20 (0.23)</b>	<b>-0.01 (0.02)</b>	<b>-0.01 (0.02)</b>
Functioning Slope					
Intercept	-0.05** (0.02)	-0.07*** (0.01)	0.08** (0.02)	0.00* (0.00)	0.00 (0.00)
Average friendship quality	-0.03 (0.02)	0.01 (0.01)	0.02 (0.03)	-0.00 (0.00)	-0.00 (0.00)
Average mother-child relationship quality	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Average teacher-child relationship quality	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 <sup>t</sup> (0.00)	0.00 <sup>t</sup> (0.00)
Male	-0.01 (0.02)	0.03 (0.02)	-0.02 (0.03)	-0.00 (0.00)	-0.01 <sup>t</sup> (0.00)
Hispanic	-0.06 (0.05)	0.03 (0.04)	-0.04 (0.05)	0.00 (0.00)	-0.00 (0.00)
Black	-0.00 (0.03)	0.01 (0.03)	0.00 (0.05)	-0.00 (0.00)	-0.00 (0.00)
Mother age	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Mother education	-0.01 (0.01)	-0.00 (0.00)	-0.01* (0.01)	-0.00 (0.00)	0.00 (0.00)
Friendship stability	-0.01 (0.01)	0.01 (0.01)	-0.02 (0.01)	-0.00 (0.00)	0.00 (0.00)
Mother neuroticism	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)

Mother extraversion	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Mother agreeableness	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Temperament	0.01 (0.03)	-0.00 (0.02)	-0.01 (0.04)	-0.00 (0.00)	-0.00 (0.00)
Average number of children	-0.01 (0.01)	-0.00 (0.01)	-0.02 (0.02)	-0.00 (0.00)	0.00 (0.00)
Average income	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Average mother employment	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Average mother married	0.02 (0.03)	-0.00 (0.02)	-0.06 (0.04)	-0.00 (0.00)	0.00 (0.00)
Average mother depression	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00* (0.00)
Average hostile intent	-0.09 (0.06)	-0.02 (0.04)	0.03 (0.10)	-0.01 <sup>t</sup> (0.01)	0.00 (0.00)
Same school	-0.05 (0.05)	0.00 (0.04)	0.05 (0.06)	0.00 (0.00)	0.00 (0.00)
Different school	0.03 (0.04)	-0.00 (0.02)	-0.04 (0.04)	0.01** (0.00)	0.00 (0.00)
Average teacher experience	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Functioning at 1 <sup>st</sup> grade	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00** (0.00)	-0.00* (0.00)
Engagement	-0.00 (0.00)	-0.00 (0.00)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)
<b>Friendship quality</b>	<b>-0.00</b>	<b>0.00</b>	<b>-0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>X engagement</b>	<b>(0.01)</b>	<b>(0.01)</b>	<b>(0.01)</b>	<b>(0.00)</b>	<b>(0.00)</b>
<b>Within-Child Estimates</b>					
Friendship quality	0.19 (0.46)	-0.01 (0.28)	0.80 <sup>t</sup> (0.41)	0.11** (0.03)	0.06 <sup>t</sup> (0.03)
Mother-child relationship quality	-0.01 (0.04)	-0.01 (0.03)	0.04 (0.05)	0.00 (0.00)	0.00 (0.00)
Teacher-child relationship quality	-0.34*** (0.03)	-0.39*** (0.02)	0.78*** (0.03)	0.01*** (0.00)	0.01*** (0.00)
Income	-0.03 (0.10)	0.06 (0.09)	0.04 (0.20)	0.01 (0.01)	0.00 (0.01)
Number of children	-0.51 (0.57)	-0.55 (0.38)	0.15 (0.56)	0.03 (0.07)	0.03 (0.05)
Mother employment	0.01 (0.02)	0.03 <sup>t</sup> (0.01)	-0.02 (0.02)	-0.00 (0.00)	-0.00 (0.00)
Mother married	0.27	0.66	1.01	0.07	0.06

	(0.91)	(0.83)	(1.40)	(0.09)	(0.09)
Teacher experience	-0.05 <sup>†</sup>	-0.07***	0.06**	-0.00*	0.00
	(0.02)	(0.01)	(0.02)	(0.00)	(0.00)

*Note.* Unstandardized coefficients of all predictor and control variables are displayed. Robust standard errors are shown in parentheses. <sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

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